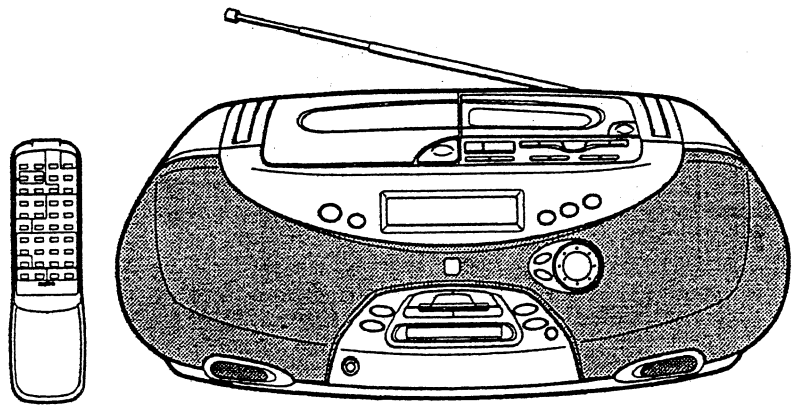
SANYO

# Service Manual

## Portable MD System

## MDC-3100F (XE)
(UK)



## Contents

**PRODUCT CODE No.**
**142 658 03 (XE)**
**142 658 04 (UK)**


Specifications ..... 1
Laser beam safety precaution ..... 1
What to do if ..... 1
Removal and installation ..... 2
Replacement of CD mechanism ..... 5
CD pick-up maintenance ..... 7
Replacement of MD mechanism ..... 8
Service mode ..... 13
CD adjustments ..... 16
Tuner adjustments ..... 18
Tape adjustments ..... 19
MD adjustments ..... 21
Trouble shooting (MD) ..... 24
Exploded view
- Cabinet & Chassis ..... 30
- Tape mechanism ..... 39
- MD loading mechanism ..... 41
- MD base mechanism ..... 44
- CD mechanism ..... 45

Parts list
- Cabinet & Chassis ..... 32
- Tape mechanism ..... 40
- MD loading mechanism ..... 42
- MD base mechanism ..... 44
- CD mechanism ..... 45

IC block diagram ..... 46
FL display ..... 56
Wiring connection ..... 57
Schematic diagram
- Tuner ..... 58
- CD ..... 60
- Syscon ..... 64
- MD ..... 68
- Amplifier ..... 74

Wiring diagram
- Tuner ..... 59
- CD ..... 62
- Switch ..... 63
- Syscon ..... 66
- MD ..... 70
- Power ..... 73
- Amplifier ..... 76

Block diagram
- MD ..... 72
- Amplifier ..... 80



**REFERENCE No. SM580908**

SERV. 31936

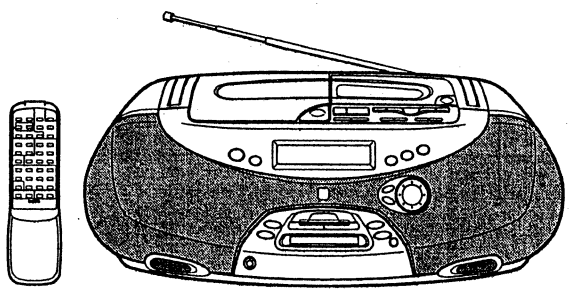
SANYO

FILE NO.

# Service Manual

**Portable MD System**

**MDC-3100F (XE)**
**(UK)**



## Contents

**PRODUCT CODE No.**
**142 658 03 (XE)**
**142 658 04 (UK)**


Specifications ..... 1
Laser beam safety precaution ..... 1
What to do if ..... 1
Removal and installation ..... 2
Replacement of CD mechanism ..... 5
CD pick-up maintenance ..... 7
Replacement of MD mechanism ..... 8
Service mode ..... 13
CD adjustments ..... 16
Tuner adjustments ..... 18
Tape adjustments ..... 19
MD adjustments ..... 21
Trouble shooting (MD) ..... 24
Exploded view
- Cabinet & Chassis ..... 30
- Tape mechanism ..... 39
- MD loading mechanism ..... 41
- MD base mechanism ..... 44
- CD mechanism ..... 45

Parts list
- Cabinet & Chassis ..... 32
- Tape mechanism ..... 40
- MD loading mechanism ..... 42
- MD base mechanism ..... 44
- CD mechanism ..... 45

IC block diagram ..... 46
FL display ..... 56
Wiring connection ..... 57
Schematic diagram
- Tuner ..... 58
- CD ..... 60
- Syscon ..... 64
- MD ..... 68
- Amplifier ..... 74

Wiring diagram
- Tuner ..... 59
- CD ..... 62
- Switch ..... 63
- Syscon ..... 66
- MD ..... 70
- Power ..... 73
- Amplifier ..... 76

Block diagram
- MD ..... 72
- Amplifier ..... 80



**REFERENCE No. SM580908**


## SPECIFICATIONS

**CD player section**
Sampling frequency ..... 44.1 kHz
Pick-up ..... Optical 3-beam semiconductor laser
Wow / flutter ..... Below measurable limits

**MD recorder section**
Sampling frequency ..... 44.1 kHz
Wow / flutter ..... Below measurable limits
Recording system ..... Magnetic modulation over write

**Cassette deck section**
Track system ..... 4-track, 2-channel stereo
Frequency response ..... 40 Hz - 15 kHz (CrO2 tape)
40 Hz - 14 kHz (Normal tape)
Fast forward / rewind time .. Approx. 110 sec. (C-60)

**Radio section**
Reception frequency .... FM : 87.5 - 108.0 MHz (0.05 MHz steps)
76.0 - 90 MHz (0.1 MHz steps)
AM : 522 - 1710 kHz (9 kHZ steps)
520 - 1710 kHz (10 kHz steps)

**General**
Output power ..... 7.5 W x 2 (10 % T.H.D)
Inputs
MIXING MIC ..... 3 mV
LINE IN ..... 500 mV (HIGH), 2 V (LOW) / 47k ohm
Output ..... PHONES : 32 ohms
Power requirements ..... AC 110/120/230 V, 50 Hz
Power consumption ..... 49 W
Dimensions (Approx.) .. 486 (W) x 166 (H) x 291 (D) mm
Weight (Approx.) ..... 5.9 kg

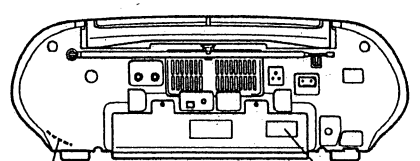
Specifications subject to change without notice.

## LASER BEAM SAFETY PRECAUTION

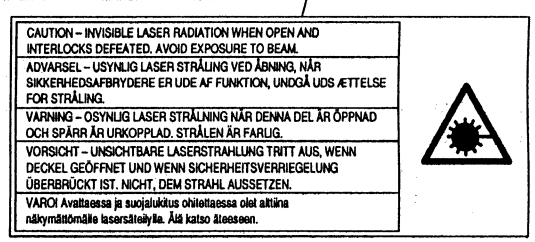
- Pick-up that emits a laser beam is used in this CD player section.

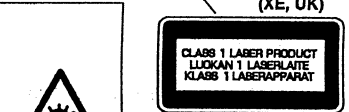
CAUTION :
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE

LASER OUTPUT ..... 0.6 mW Max. (CW)
WAVELENGTH ..... 790 nm



(XE, UK)


CAUTION – INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.
ADVARSEL – USYNLIG LASER STRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION, UNDGÅ UDS ÆTTELSE FOR STRÅLING.
VARNING – OSYNLIG LASER STRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRR ÄR URKOPPLAD. STRÅLEN ÄR FARLIG.
VORSICHT – UNSICHTBARE LASERSTRAHLUNG TRITT AUS, WENN DECKEL GEÖFFNET UND WENN SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT IST. NICHT, DEM STRAHL AUSSETZEN.
VARO! Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

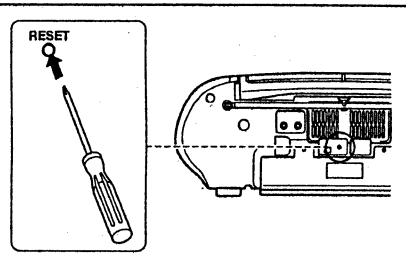



(XE ONLY)

## WHAT TO DO IF

- If the operation of the unit or display is not normal, or you wish to clear the contents of the memory.

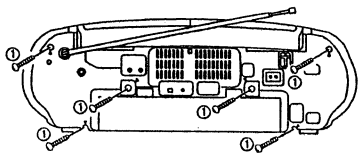
1. Disconnect the power cord's plug from the electrical outlet.
2. Press the RESET button for at least 5 seconds.
3. Connect the power cord.
4. Press the STANDBY button to turn the power on.



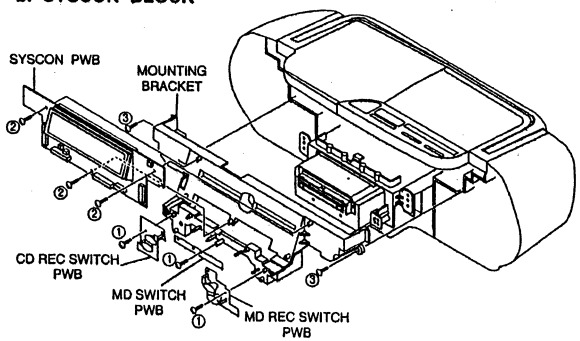
## REMOVAL AND INSTALLATION

- Disconnect the power cord's plug from the electrical outlet.
- All wiring should be returned to original position after work is completed.
- First have ready may the new FIXERS (614 129 4971) for replacement.
- Arrange the lead wires so that they are not near the heat sink.

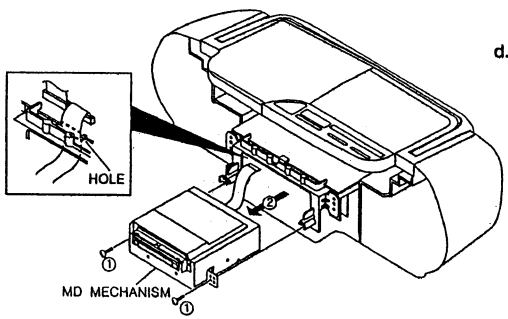
### a. CABINET



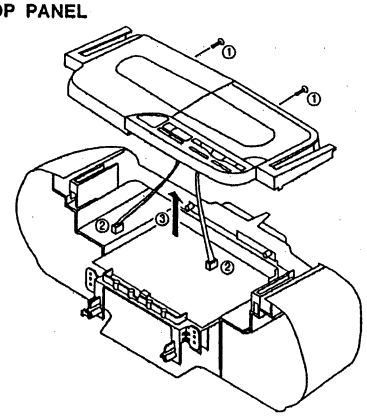
### b. SYSCON BLOCK



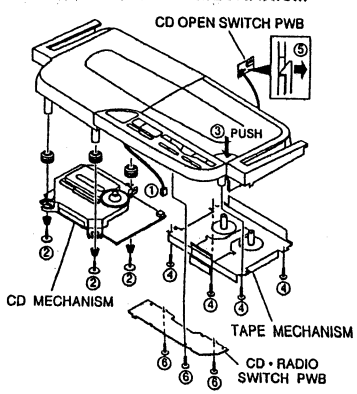

### c. MD BLOCK



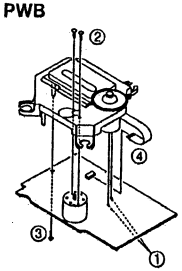

### d. TOP PANEL



### e. CD MECHANISM & TAPE MECHANISM



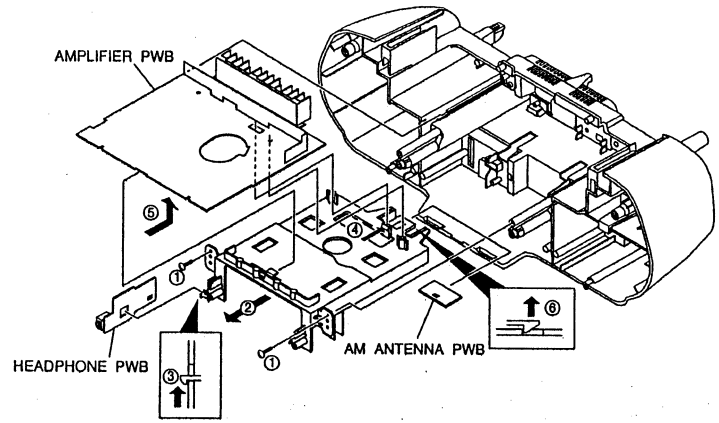

### f. CD PWB



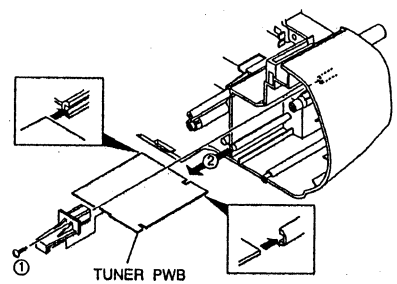


## REMOVAL AND INSTALLATION

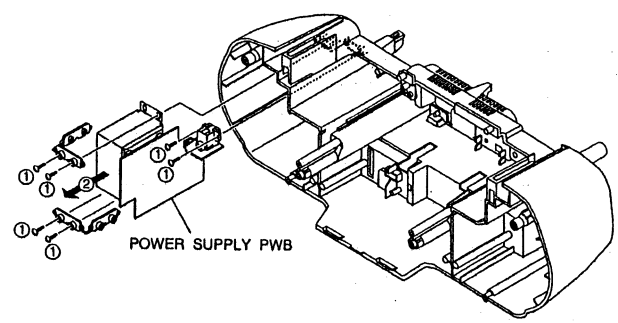
### g. AMPLIFIER PWB




### h. TUNER PWB



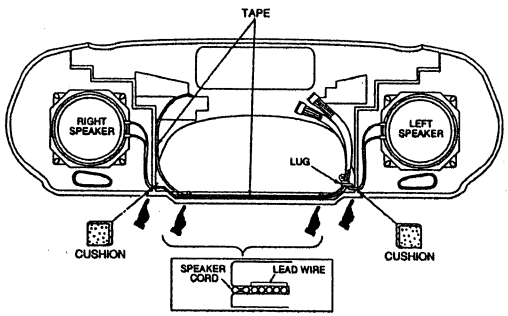

### i. POWER SUPPLY PWB



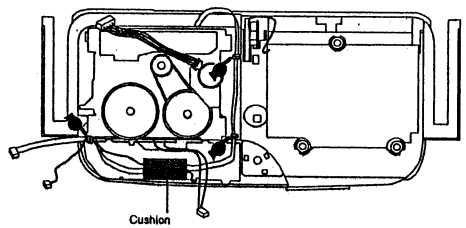
## REMOVAL AND INSTALLATION

### J. WIRING LAYOUT

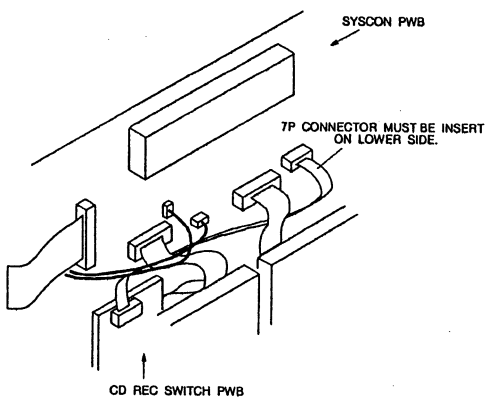
• FRONT PANEL

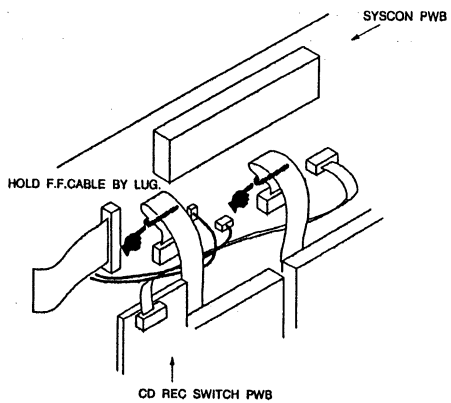


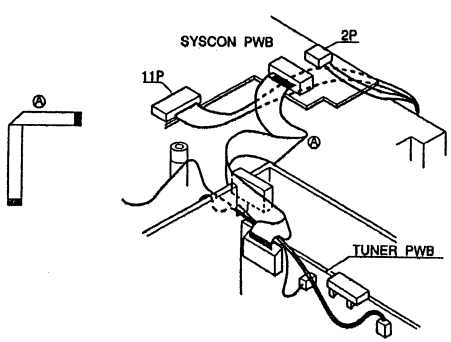

• TOP PANEL




• SYSCON PWB





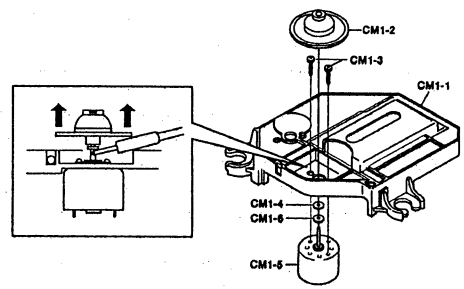

## REPLACEMENT OF CD MECHANISM

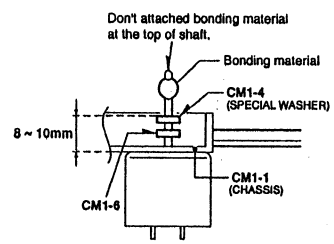
- Note that the mechanism of the CD player section is very delicate.
- It is very important that the spindle motor (which rotates the disc), and the sled motor (which cases the disc signals to be tracked), as well as the gear and other components, operate smoothly, without eccentricity.
- When handling the pickup, take care not to exert excessive force, and particular care should be taken not to touch the lens or the drive circuit's P. W. Board pattern.

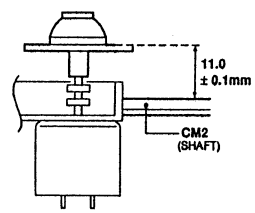
### a. REPLACEMENT OF THE SPINDLE MOTOR

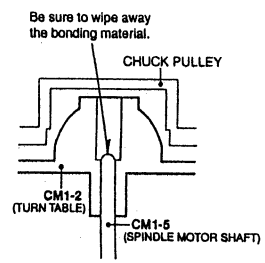
- First, prepare the new turntable(CM1-2) and new special washer(CM1-4) for replacement. The removed turntable will be deformed by the heat of the soldering iron, and cannot be reused.
- Prepare dial type calipers.

(1) The attached bonding material can be dissolved by using a 60W soldering iron to heat the shaft at the under part of the turntable for about one minute.
(2) The turntable can then be removed from the shaft by very carefully applying force upward at the center of the lower surface of the turntable.
(3) Remove the two screws(CM1-3) and remove the spindle motor(CM1-5).
(4) Attach the special washer to the spindle motor.
(5) Apply a small amount of a mixture of the "Three Bond 2001 and 2015F" bonding materials to the motor's shaft.
(6) Install the turntable as shown in the figure. Secure the turntable by pressing gently. Be sure to wipe away (by using a piece of cloth, or similar material) any bonding material coming out of the hole.



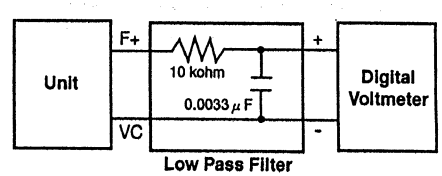




### b. CONFIRM OF INCLINATION FOR THE TURNTABLE

(1) Connect the digital voltmeter as shown in the figure.
(2) Set the test disc (TEDS 18 = SONY or etc.), press the PLAY button. (Playback for the most inner music)
(3) At this time, record voltage value to indicate at the digital voltmeter.
(4) Access the most outer music, press the PLAY button. (Playback for the most outer music)
(5) Again at this time, record voltage value to indicate at the digital voltmeter.
(6) For reference at the recorded voltage of the most inner music, confirm at ± 300 mV less than for recorded voltage of the most outer music.



## REPLACEMENT OF CD MECHANISM

### c. REPLACEMENT AND LUBRICATION OF THE PICKUP

- Before replacement of the pickup, be sure to carefully read the section regarding the pickup when the unit is moved or transported.

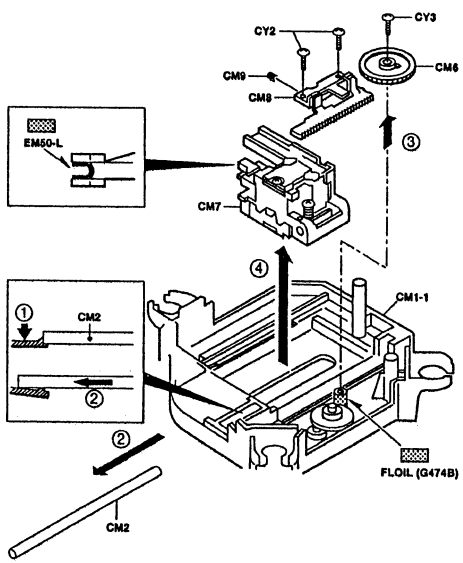
(1) Remove the a pickup rail(CM2) with care fixing the latch with way driver from bottom part of chassis(CM1-1).

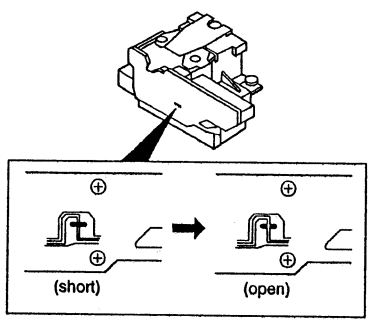
(2) The pickup(CM7) can now be remove once the a pickup rail have been taken out.

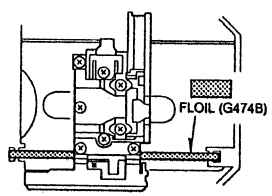
- When removing or inserting a pickup rail from or into chassis, take care not to exert excessive force.
- If the pickup is reconditioned of replaced, be sure to wipe the rails clean and also apply a coating of FLOIL(G-474B) to there entire circumference and entire length. When applying the grease, do not allow any grease to adhere to any other parts.

(3) Pass the a pickup rail through the new pickup.

- The pickup P. W. Board pattern is "shorted", as shown in the figure, so that the new pickup will not be susceptible to the effects of static.
- Set the pattern to "open" after the pickup has been replaced.

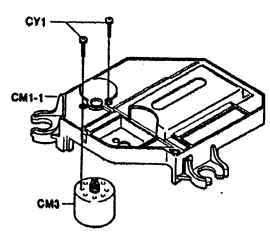



### d. REPLACEMENT OF THE SLED MOTOR

(1) Remove the two screws(CY1) and remove the sled motor(CM3).






## REPLACEMENT OF CD MECHANISM

### e. CHECKING THE ACTION OF THE CD MECHANISM

(1) Disconnect the socket (for the sled motor power supply) from the P. W. Board.

(2) Apply a voltage of DC 2.0V to the sled motor's terminal.

(3) Measure the current during sled motor operation.

- The direction of movement of the pickup (outer groove or inner groove) can changed by changing the battery polarity.

(4) The current during sled motor action varies according to the positional relationshipping of gears(CM5 and CM6).

(5) If the current exceeds 40mA, remove the gears(CM5 and CM6).

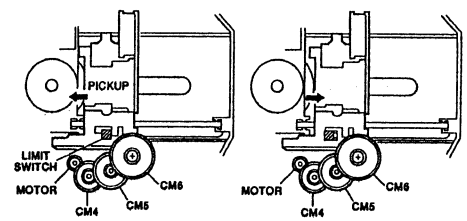
(6) Apply a small amount of a FLOIL(G-474B) bonding materials to the chassis shafts.

| Direction of pickup movement | Sled motor current |
|---|---|
| Outer groove | 40 mA or less |
| inner groove | 40 mA or less |

### f. RESETTING THE PICKUP TO THE HOME POSITION

(1) The limit switch is switched ON by the projection of this rack gear secured to the returned pickup, after which the sled motor continues to operate (by the circuit) for approximately 30 msec. : there is then again a reverse operation, and movement to the position at which the switch the switch is switched OFF.

(2) Rotation continues for about 30 msec. after the switch is switched OFF, and then the pickup stop at home position.




## CD PICK-UP MAINTENANCE

**About pick-up (Optical lens) Cleaning**

Clean the lens with the specified cleaning disc or moisten a cotton swab with isopropyl alcohol and cleaning paper.

Specified cleaning disc : LC-1 (Part code : 645 026 1961 ..... manufactured by SANYO.)

Regarding procedure of cleaning with moisten cotton swab, please refer to the attached as follows.

1. Cotton swab wrapped with Cleaning paper
2. Add the isopropyl alcohol
3. Gently move the tip of cotton swab just like a draw a whirlpool from inside to outside on the surface of lens.

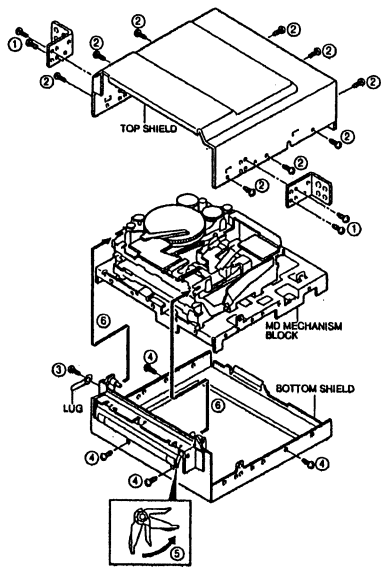
## REPLACEMENT OF MD MECHANISM

### Preparations

- Before starting, remove any MD that is loaded in the unit. Because MD is very sensitive, treat it carefully.
- Electronic circuit components, such as the Pickup and the PWBs (especially the laser diode and the LSIs and ICs), are very sensitive and vulnerable to damage from static electricity, and must be handled with the utmost care.
  - All apparatuses, test equipment, and tools must be grounded. In order to prevent AC leakage from a soldering iron, the metal portion of the soldering iron must be grounded.
  - A conductive sheet must be spread over the workbench and grounded.
- The Motor and the Pickup, etc. are precision components. So don't give a shock to these and damage it with a tool.
- Never use excessive force when handling the Pickup, and be especially careful not to touch the lenses, drive mechanisms, or drive circuitries.

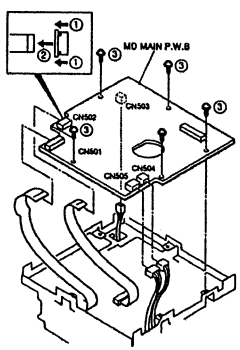
### a. Disassemble the MD mechanism Block

(1) Remove the 4 MD unit joint screws. (①)
(2) Remove the 9 the top shield screws. (②)
(3) Remove the 1 fixing lug screw. (③)
(4) Remove the 4 bottom shield screws. (④)
(5) Remove the shutter spring as figure. (⑤)
(6) Remove the MD mechanism block. (⑥)



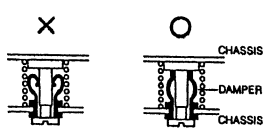

### b. Disassemble the MD main P.W.B

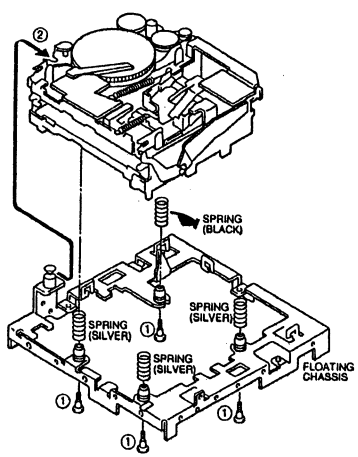
(1) Gently remove the 5 connectors (CN501~505) at MD Main P.W.B and MD mechanism. (①, ②)
(2) Remove the 4 MD main P.W.B screws. (③)
(3) Able to separate MD Main P.W.B and MD mechanism.




### c. Disassembly the Floating Chassis

(1) Remove the 4 MD mechanism screws. (①)
(2) Separate the MD mechanism. (②)
- When installing the MD mechanism, be very careful to place the black and silver springs in their correct positions.
- Mount the dumper as follows.





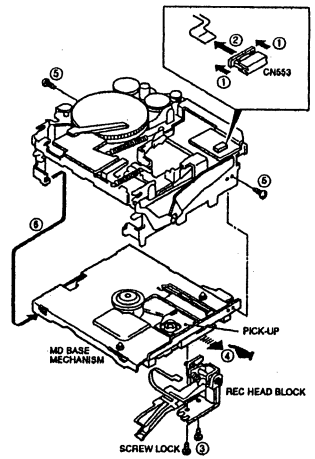

## REPLACEMENT OF MD MECHANISM

### d. Disassemble the REC head and Base mechanism

(1) Remove the connector from REC head of Head Relay P.W.B. (①, ②)
- Never apply excessive force to the Flexible Film Cable that connects the REC head to the Head Relay board. Doing so could damage the Flexible Film Cable.

(2) Remove the 2 REC head block screws. (③)
- When attaching the REC Head block, first move the MD Pickup in the direction indicated by the arrow in the diagram. (④)

(3) Remove the 2 screws at fixing loading mechanism and base mechanism. (⑤)
(4) Remove the base mechanism as figure.(⑥)
(5) Separate the loading mechanism and base mechanism.

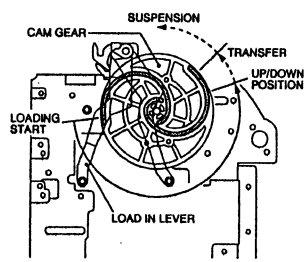


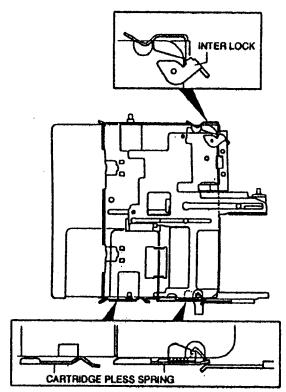

### e. Action of MD loading mechanism section

**Slot the MD (Mini Disc) cartridge**

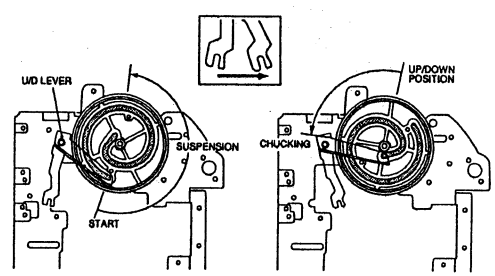
- The MD Loading Door can be opened from the front.

(1) When an MD cartridge is loaded manually, the Loading Slide (LM36) located on the left front edge of the cartridge is pressed, releasing the Loading Slide Interlock . The cartridge is then held in place by the Cartridge Press Spring (LM35, LM37).
(2) If the Loading Slide (LM36) is pushed back further, the Switch Lever (LM62) is tripped, turning on S5502 on the Switch board (101), which causes the Loading Motor (LM48) to begin to turn.
(3) The Loading Motor turns the Cam Gear (LM64). This moves the Loading Lever (LM51) in the Under Cam block, which moves the Loading Slide (LM36) backwards.

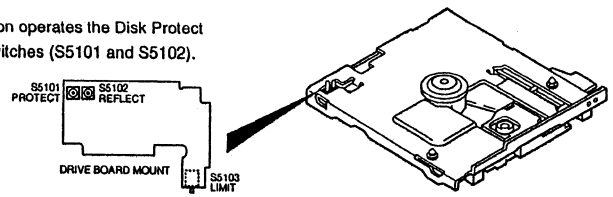



(4) The Up/Down Lever (LM68) in the Upper Cam block then moves, moving the Up/Down Slide (LM60) backwards.
(5) As the Up/Down Slide moves, the Cartridge Holder (LM32) descends, executing the disk chucking operation.
(6) The Up/Down Lever (Head Up/Down) in the Cartridge Holder and the Cam Gear (Head Up/Down) in the Up/Down Slide move together, lowering the head.
(7) The descent of the Loading Slide (LM36) causes Door Open/ Close Levers A and B to operate, closing the door.

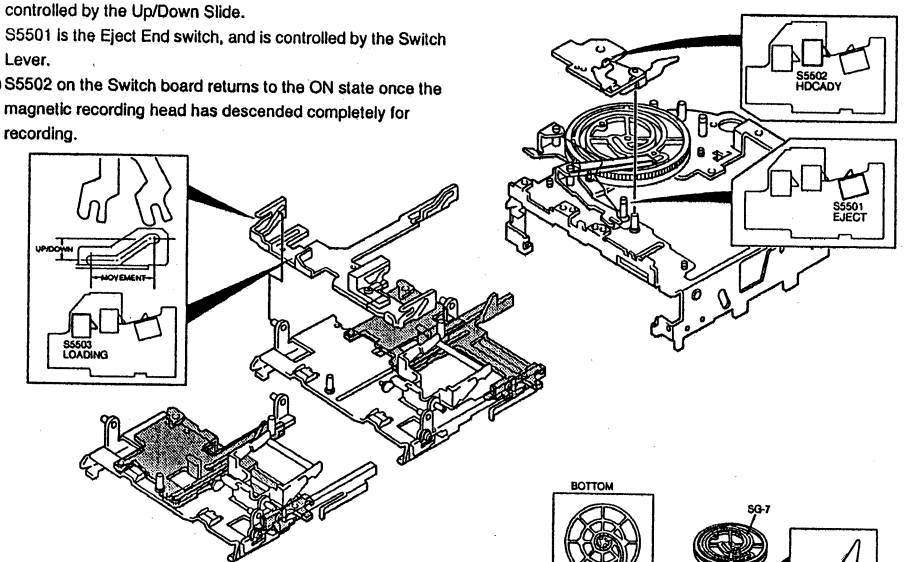


(8) The disk (MD) chucking operation operates the Disk Protect and Disk Media (REFLECT) switches (S5101 and S5102).



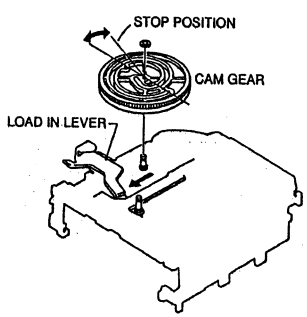

(9) S5503 on the Switch board is the Loading End switch, and is controlled by the Up/Down Slide.
S5501 is the Eject End switch, and is controlled by the Switch Lever.

(10) S5502 on the Switch board returns to the ON state once the magnetic recording head has descended completely for recording.



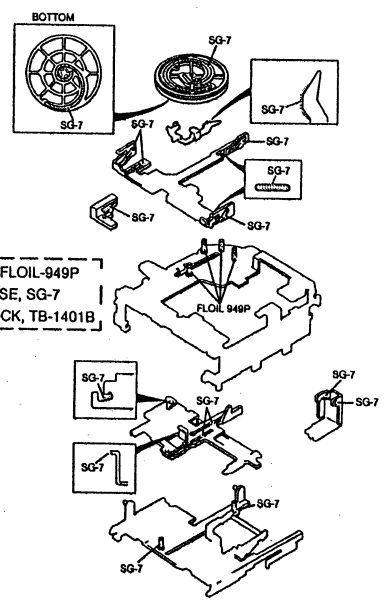

### f. Installing the Cam Gear

(1) It puts Loading Lever (LM51) to orientation of arrow.
(2) Mount the Cam Gear (LM64) as figure.




**Lubrication**

| | |
|---|---|
| FLOIL 949P | FLOIL OIL, FLOIL-949P |
| SG-7 | SAN GREASE, SG-7 |
| TB-1401B | SCREW LOCK, TB-1401B |

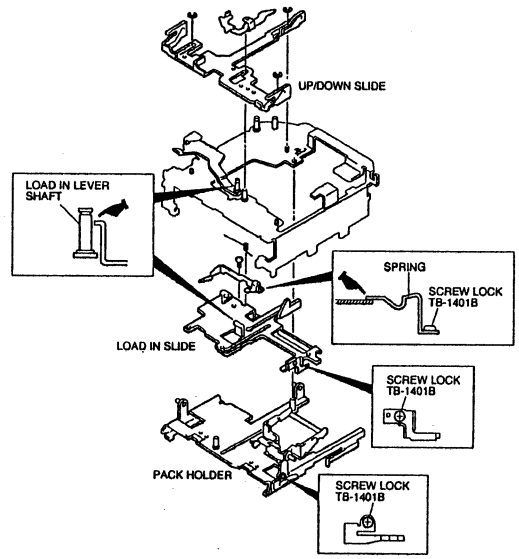






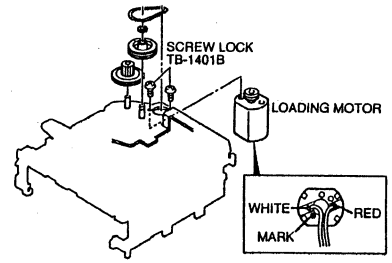

### g. Installing the Loading Mechanism parts

After attached, apply screw lock as shown in the figure.



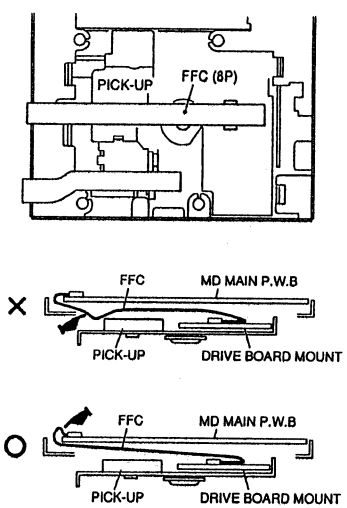

### h. Installing the Loading Motor

After attached, apply screw lock as shown in the figure.



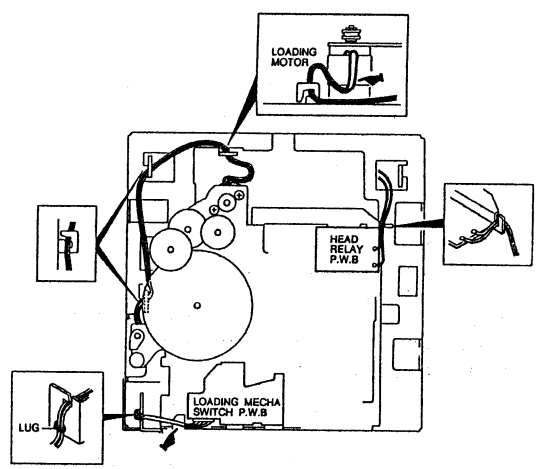

### i. Installing the Flexible Film Cable (FFC)

Attach the FFC as shown in the diagram in order to prevent sound skip.




### j. Wiring Layout

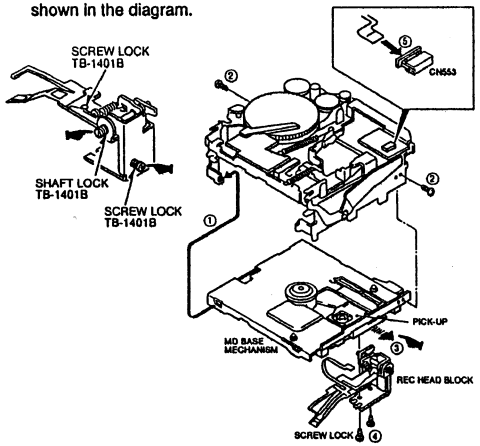
Arrange the lead wire as shown in the figure.



## REPLACEMENT OF MD MECHANISM

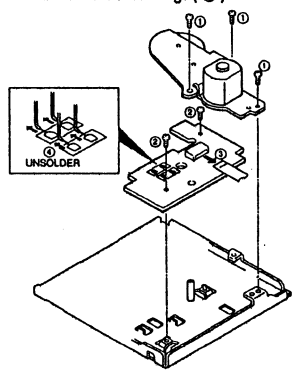
### k. Installing the REC Head

- *Be very careful not to scratch the magnetic recording head while attach it.*
- After attach the magnetic recording head, apply screw lock as shown in the diagram.




### l. Replacing the MD Sled mounting block and Mechanism switch

(1) Remove the 3 Sled mounting screws. (①)
(2) Remove the 2 Mechanism switch P.W.B screws. (②)
(3) Remove the Flexible Film P.W.B form Mechanism switch P.W.B. (③)
(4) Remove the 4 leads with soldering. (④)

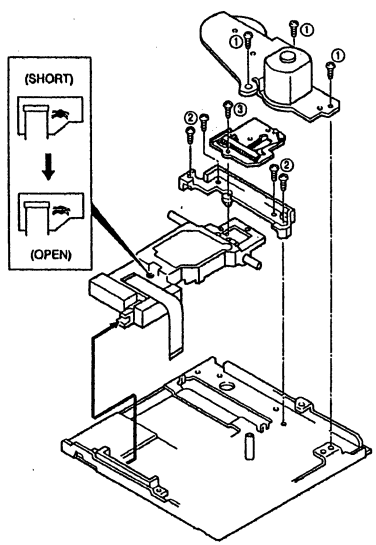



### m. Replacing the MD pick-up and Pack mounting block

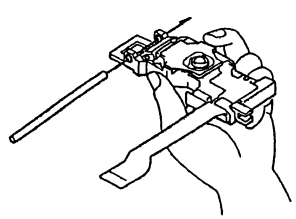
CAUTION:
- Do not disassemble or adjust of pick-up, it is dangerous for them.
- Do not look directly at the laser beam coming from the pick-up or allow it to against your fingers, skin, etc.

- It short-circuits a pattern of pick-up to keep pick-up than static electricity as shown in chart.
- Do not bring a magnet or other magnetized object near to it.
- If the center of the lens is dirty, carefully clean it using cotton swab moistened with isopropylalcohol. Also, be careful not to bend the lens spring when cleaning.

(1) Remove the 3 Sled mounting assembly screws. (①)
(2) Remove the 4 Shaft mounting screws. (②)
(3) Remove the Pack mounting assembly screw. (③)
(4) Can take off the MD pick-up and shaft.
(5) After replacing the MD pickup with a new one and connecting the Flexible Film Cable (FFC) to the connector, open the pick-up pattern (on the FFC).
(6) After the MD pick-up has been replaced, the MD block must be adjusted.




### n. Having the MD pick-up





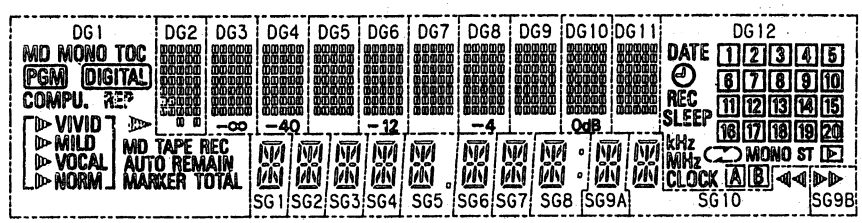
## SERVICE MODE

### a. Service mode entry

To establish any of the service modes, press the ENT/YES button and REV MODE button on the unit together to establish first the service mode entry status. Then press a button corresponding to the mode on the unit to establish the service mode desired. The service mode entry status is released when more than one second is allowed to elapse after the ENT/YES button and REV MODE button have been pressed together (and not released). (A service mode is established only when the next button is pressed within one second after the two buttons are pressed.)

### b. Button connection check

- This mode is established by pressing the SOUND/BASS button in the service mode entry status.
- When the mode is established, the power is automatically turned on if it was off.
- When the mode is established, all the FL display segments and LEDs light.
- Each time one of the buttons on the unit (or remote control) is pressed in this mode, the FL display segment and LED go off if they were on or, conversely, they come on if they were off.
- Press the STANDBY button to cancel this mode.




| Button | Display |
|---|---|
| P.SCAN | DG2 |
| RADIO/BAND | DG3 |
| CD SKIP/SERCH ▶▶I | DG4 |
| CD SKIP/SERCH I◀◀ | DG5 |
| CD STOP/CLEAR ■ | DG6 |
| CD PLAY/PAUSE ▶/II | DG7 |
| TAPE AMSS ◀◀ | DG8 |
| TAPE REV PLAY ◀ | DG9 |
| TAPE STOP ■ | DG10 |
| TAPE FWD PLAY ▶ | DG11 |
| CD▶TAPE SYNCHRO REC (NORM) | DG8 (-4) |
| CD▶MD DIGITAL REC (SYNCHRO) | SG1 |
| MD ■ | SG2 |
| MD ▶▶I | SG3 |
| MD ▶/II | SG4 |
| MD I◀◀ | SG5 |
| MD ●/II | SG6 |
| SOUND / BASS | SG7 |
| MD DELETE (LETTER) | SG8 |

| Button | Display |
|---|---|
| MD LETTER | SG9A, SEG9B |
| MD EDIT | DG10 ◀◀ |
| MD EJECT | DG10 (0dB) |
| CD▶MD DIGITAL REC (AUTO) | DG1<br>MD, PGM, DIGITAL, VIVID, MILD<br>VOCAL, ▶ NORM, ▶ (Play) |
| TAPE REC / REC PAUSE | DG1 MONO, TOC |
| TAPE REV MODE | DG1<br>▶ NORM, ▶ MILD, ▶ VOCAL |
| SOUND / LETTER, CCL / NO | DG1<br>COMP, REP, MD, TAPE, REC<br>AUTO, REMAIN, MARKER, TOTAL |
| TAPE AMSS ▶▶ | DG12 (1 - 20) |
| CD▶TAPE SYNCHRO REC (HIGH) | DG12<br>DATE, ◴, REC, ▶ (⁀) |
| SOUND / LETTER, ENT / YES | DG12<br>SLEEP, kHz, MHz, ⟵, MONO, ST, A, B |
| CD LID OPEN | LED NORM |
| CD LID CLOSE | LED HIGH |
| JOG DIAL | LED SYNCHRO / AUTO |

### c. Timer debugging mode

- This mode is established by pressing the REV MODE button in the service mode entry status.
- When the TUNING + button on the unit is pressed in this mode, the present time is advanced by 1 minutes, and 55 seconds are set for the second display. When the button is held down, the time is advanced continuously. (See Fig. 1)
- The mode is exited and the normal mode is restored by pressing the REV MODE button.

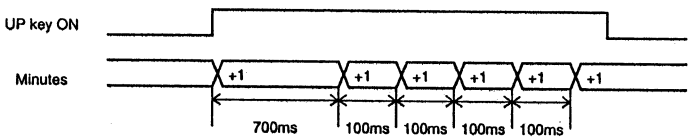



**Fig. 1 Continuous key pressing timing**

### d. CD adjustment mode

- This mode is established by pressing the CD SKIP/SEARCH ▶▶I button in the service mode entry status.
- When the mode is established, CD is selected as the function, and the power is automatically turned on if it was off.
- In this mode, the tracking balance adjustment mode (tracking off) is automatically established after the tray has finished closing. When the CD PLAY button is now pressed, the tracking servo is turned on, and play is performed then and there. (Even if the read-in area is involved, TN0=00 and E.TIME are displayed, and play is performed.) The pick-up's initial position (limit switch position) can be ascertained from the display which appears when play is commenced.
- When the CD→MD SYNCHRO button is pressed during play in this mode, the tracking balance adjustment mode is changed to the tracking servo on play mode.
- In this mode, CD play does not stop even with the servo error status.
- The CD circuit power is not turned off when CD play is stopped in this mode. (For the focus offset adjustment)
- If the HIGH button is pressed during play in this mode, the standard speed is switched to double speed or vice versa.
- This mode is released when the power is turned off.

### e. CD repair mode

- This mode is established by pressing the CD SKIP/SEARCH I◀◀ button in the service mode entry status.
- When the mode is established, CD is selected as the function, and the power is automatically turned on if it was off.
- In this mode, a display indicating a CD operation which is at variance from the normal display appears in the FL 7-segment (SG7) area while the CD function is selected.
- When a CD error occurs in this mode, the calendar numbers light as shown in Table 1. After an error has occurred, the CD operation display and calendar area display remain fixed. The fixed displays are released by pressing the STOP button in the stop status.
- If the HIGH button is pressed during play in this mode, the standard speed is switched to double speed or vice versa.
- This mode is released when the power is turned off.

| No. | CD Error |
|---|---|
| 1 | Proper focusing is not possible during the focus search mode. |
| 2 | Focus was lost while the servo was on (during playback, etc.). |
| 3 | GFS O.K. is not achieved when a disc starts playing. |
| 4 | GFS N.G. occurred while the servo was on (during playback, etc.). |
| | |
| 6 | TOC can not be read. |
| 7 | The tray opens improperly. |
| 8 | The tray closes improperly. |

**Table 1 CD error status display**





### f. Deck inspection mode

- This mode is established by pressing the TAPE STOP button in the service mode entry status.
- When the mode is established, tape is selected as the function, and the power is automatically turned on if it was off.
- In this mode, the LINE function is selected when the REC button is pressed. Alternatively, the CD function is selected when the CD OPEN button is pressed.
- In this mode, the recording operation is commenced directly during CD double-speed dubbing (without rewinding, etc.).
- When CD dubbing or manual REC is stopped in this mode, the tape is automatically rewound to the recording start position where tape play then starts.
- Cue and review operations are possible using the unit's FF and REW buttons in this mode. (AMSS operations are no longer performed.)
- In this mode, the volume up/down speed is set to 8 times normal speed (while the button is continuously pressed).
- This mode is released when the power is turned off.

### g. Tuner inspection mode

- This mode is established by pressing the RADIO/BAND button in the service mode entry status.
- When the mode is established, tuner is selected as the function, and the power is automatically turned on if it was off. FM is selected as the band, and the lowest frequency is tuned in.
- In this mode, the volume up/down speed is set to 8 times normal speed (while the button is continuously pressed).
- In this mode, the volume level is automatically initialized to -10 dB in the FM band and 0 dB in the AM band.
- This mode is released when the power is turned off.

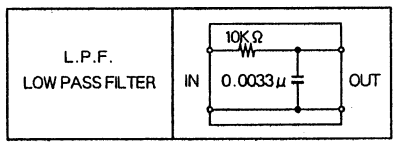
### h. Version display mode

- This mode is established by pressing the TAPE REC button in the service mode entry status when MD was selected as the function and the power was turned on.
- The version of the system control's program is displayed for several seconds.
  Example of display: S Y 9 8 0 2 0 9 a
- The version of the MD program is displayed when push TAPE REC button once again.
  Example of display: M D 9 8 0 1 2 9 a

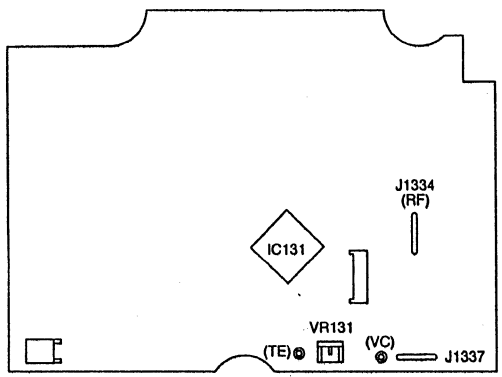
## CD ADJUSTMENTS

### a. Equipment to be Prepared for Adjustment

1. Test disc : YEDS18 (Sony)
2. Oscilloscope : SS5711, etc. (10 MHz or higher, dual-channel system)
   (Memory scope) : DSS6521, etc. (10MHz or higher)
3. Screwdriver for adjustment : Non-metallic
4. Filter : See Table below. (P.W. Board Ass'y)




### b. Parts Location



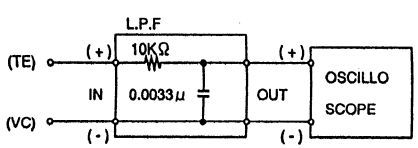

### c. Adjustment Items

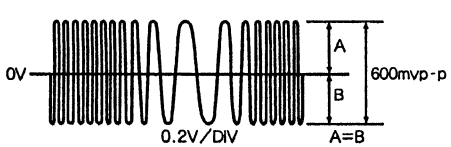
- Adjustments to the CD block are performed in the service mode.
- Service mode settings (CD adjustment mode) should be made as follows.

1. Press the ENT/YES button and the REV MODE button at the same time to activate service mode entry status.
2. Within one second of pressing the buttons, press the SKIP/SEARCH ▶▶I button. This completes the adjustment mode settings.
3. Pressing the STANDBY button a second time cancels the service mode, switches to the normal operating mode, and powers down the unit.

#### (1) Tracking Balance Adjustment

1. Activate the service mode.
2. Connect the test points (IC131 pin42 and pin48[J1337]) to an oscilloscope via a low pass filter (L.P.F.).
3. Load the test disc.
4. Press the CD PLAY button. (The tracking servo is disengaged, making it possible to adjust the tracking balance.)
5. Make 0 V the pivot point of the waveform and adjust VR131 so that the upper and lower portions are symmetrical.
6. Press the STOP button.
7. Cancel the service mode and turn power off.



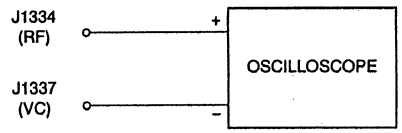



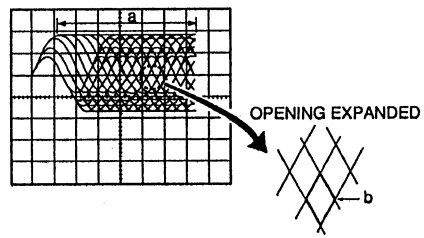



## CD ADJUSTMENTS

#### (2) Eye Pattern Confirmation

1. Connect the test points (RF[J1334] and VC[1337]) to an oscilloscope.
2. Load the test disc.
3. Press the CD PLAY button.
4. Confirm that an eye pattern appears on the oscilloscope. Also confirm that the voltage of the RF waveform at this point is 0.7 V or more.

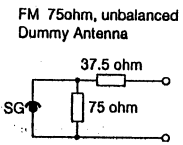


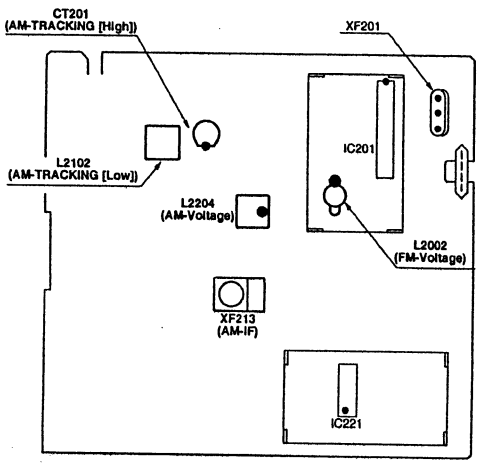
## TUNER ADJUSTMENTS

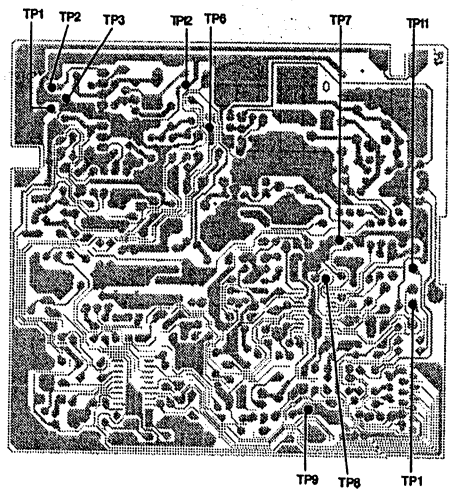
### a. Equipment to be Prepared

1. FM SG (digital type)
2. Stereo modulator
3. V.T.V.M
4. Oscilloscope
5. Frequency counter
6. Counter amplifier
7. IHF filter (B.P.F.; 200 - 15,000 Hz)
8. Digital voltmeter




### b. Parts location




### c. Adjustments

**1. AM Adjustment** Band Switch : AM Antenna : IRE Loop, Modulation frequency : 400 Hz, Modulation : 30 %

| Step | Adjusting Circuit | Tuning Frequency | Input Connection | | Output Connection | | Adjustment | VTVM Oscilloscope or DC voltmeter |
|---|---|---|---|---|---|---|---|---|
| | | | Measurement | Input | Measurement | Output | | |
| 1 | IF | 450 kHz (at 999 kHz) | AM Sweep Generator | Loop Antenna | VTVM Oscilloscope | TP8 (H) TP7 (E) | XF213 | |
| 2 | Tuning coverage | 522 kHz | — | — | Digital Voltmer | TP6 (H) TP12 (E) | L2204 | 1.0±0.05V |
| | | 1710 kHz | | | | | — | Confirm 3.8±0.8V |
| 3 | Tracking | 603 kHz | AM Signal Generator (75dB) | Loop Antenna | VTVM Oscilloscope | TP10 (L), TP11 (R), TP9 (E) | L2102 | Maximum |
| | | 1404 kHz | | | | | CT201 | |

**2. FM Adjustment** Band Switch : FM Antenna : 75 ohms unbalanced, Modulation frequency : 1 kHz, Frequency deviation : Mono = ± 22.5 kHz, Stereo = ± 22.5 kHz, Pilot = ± 6.75 kHz

| Step | Adjusting Circuit | Tuning Frequency | Input Connection | | Output Connection | | Adjustment | VTVM Oscilloscope or DC voltmeter |
|---|---|---|---|---|---|---|---|---|
| | | | Measurement | Input | Measurement | Output | | |
| 1 | IF | 10.65 MHz (at 98.0 MHz) | FM Sweep Generator | TP2 (H) TP3 (E) | VTVM Oscilloscope | TP8 (H) TP7 (E) | — | |
| 2 | Tuning coverage | 87.5 MHz | — | — | Digital Voltmer | TP6 (H) TP12 (E) | — | Confirm 2.3±0.5V |
| | | 107.9 MHz | | | | | L2002 | 4.0±0.1V |
| 3 | Tracking | 90.0 MHz | FM Signal Generator (60dB) | TP1 (H) TP3 (E) | VTVM Oscilloscope | TP10 (L), TP11 (R), TP9 (E) | — | Confirm with being near by effective sensitivity. |
| | | 106.0 MHz | | | | | — | |

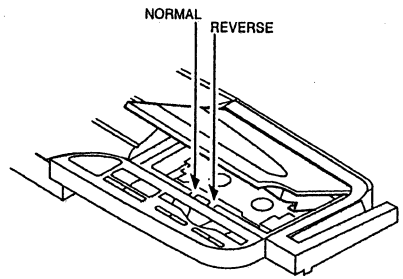


## TAPE ADJUSTMENTS

### a. Adjusting Azimuth

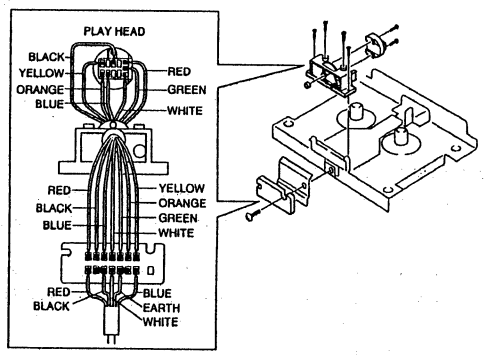
- Be sure to clean the heads before attempting to make any adjustment.
- Be sure both channel's waveform are the same for the phase matching.
- Be sure both channels (1 and 2) are the same level using a dual-channel oscilloscope.
- After completion of the adjustment, apply the threadlock (TB-1401B) to the azimuth adjustment screws to fix them securely.

1. Load an azimuth adjustment test tape (VTT-703 etc. : 10 kHz) in tape deck.
2. Press the PLAY button. (normal playback)
3. Use a flat-tip screwdriver to turn the screw for normal azimuth adjustment so that the left and right outputs are maximized at the same phase during normal playback.
4. Play the tape in the reverse mode.
5. Use a flat-tip screwdriver to turn the screw for reverse azimuth adjustment so that the left and right outputs are maximized at the same phase during reverse playback.



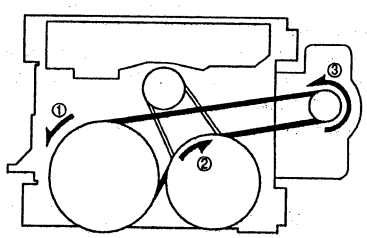

### b. Replacing the Heads

- After replacing the heads, demagnetize the heads by using a degausser.
- All wiring should be returned to the original position after work is completed.




### c. Replacing the Belt

- Thread the Main belt and the RF belt.
- Rotate the flywheel and check that the belt is turning properly.

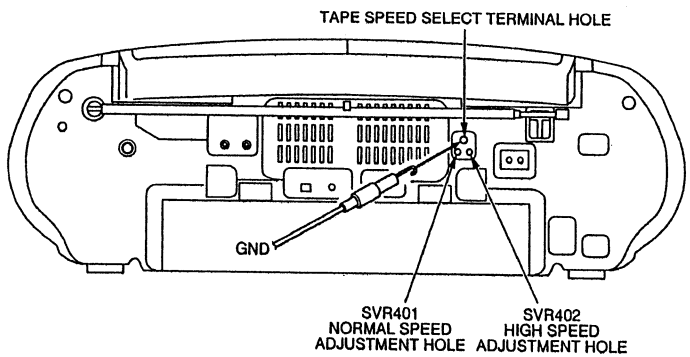


## TAPE ADJUSTMENTS

### d. Adjusting Tape Speed

- Use a plastic screwdriver for adjustment.
- Be sure to operate the tape mechanism with the tape running at the normal speed instead of the high speed, which may cause the mechanism to malfunction.

1. Insert the wow test tape for checking the high-speed operation (ABEX TCW-211, etc.) into the tape deck. At this time, set the test tape to a FWD ending position.
2. Connect the frequency counter to phones terminal.
3. Press the PLAY button in the FWD mode. (The frequency counter indicates 1500 Hz, for the tape runs at the normal speed at this time.)
4. Set the tape to the high-speed mode. (Connect the tape speed switch terminal to GND, and the tape starts running in the high-speed mode.)
5. Insert the screwdriver to the tape speed adjustment hole for high speed. Make adjustment in such a way that the frequency counter indicates 3000 ± 10 Hz at a FWD ending position.
6. Remove the tape speed switch terminal from the GND, then set the normal speed and press the STOP button.
7. Insert the wow test tape for checking the normal speed operation (TEAC MTT-111N, etc.) in the tape deck. At this time, set the test tape to a FWD ending position.
8. Press the PLAY button in the FWD mode.
9. Insert the screwdriver to the tape speed adjustment hole for normal speed. Make adjustment in such a way that the frequency counter indicates 3000 ± 10 Hz at FWD ending position.




### e. Checking the Mechanism Torques

- Clean the head, capstan and pinch roller before making any adjustment.
- Check both the normal and reverse playback conditions of the tape deck.

| ITEM | TAKE UP TORQUE | BACK TENSION | TAPE TENSION |
|---|---|---|---|
| CASSETTE FOR MEASUREMENT | PLAY : TW-2111A (FWD)<br>PLAY : TW-2121A (REV)<br>F.FWD/REW : TW-2231 | PLAY : TW-2111A (FWD)<br>PLAY : TW-2121A (REV) | DRIVE POWER CASSETTE<br>PLAY : TW-2412 (FWD)<br>PLAY : TW-2422 (REV) |
| PLAY | 30 ~60 gr.cm | 2.0 ~5.0 gr.cm | 80 gr or more |
| F.FWD | 70 ~140 gr.cm | ——— | ——— |
| REW | 70 ~140 gr.cm | ——— | ——— |



## MD ADJUSTMENTS

### a. MD unit service mode

- **Preparations to enter the service mode (adjustment)**

(1) Press the POWER button to turn on the power.
(2) Check that "HELLO!" appears in the FL display area.
(3) Press the MD button to select the MD function.
(4) Check that the following appears in the FL display area:

| NO DISC<br>MD – – – |
|---|

(5) Establish the service (adjustment) mode by pressing the MD EJECT button within one second after the ENT/YES button and REV MODE buttons have been pressed together.
(6) "T = 25 OK?" appears in the FL display area. This completes the preparations for establishing the service (adjustment) mode.
(7) Disconnect the AC cord to release the service mode.

- **Preparations to enter the service mode (inspection)**

(1) Press the POWER button to turn on the power.
(2) Check that "HELLO!" appears in the FL display area.
(3) Press the MD button to select the MD function.
(4) Check that the following appears in the FL display area:

| NO DISC<br>MD – – – |
|---|

(5) Establish the service (inspection) mode by pressing the AUTO button within one second after the EXECUTE button and RUN SELECT buttons have been pressed together.
(6) "Ld Disc" appears in the FL display area. This completes the preparations for entering the service (inspection) mode.
(7) Disconnect the AC cord to release the service mode.

* EJECT, PLAY (continuous play), REC (continuous recording) and STOP operations can be performed in this mode.

### b. Adjustment preparations

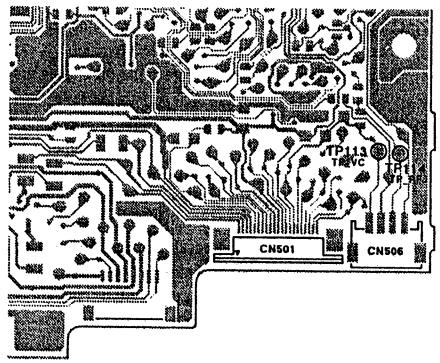
- Oscilloscope (100 MHz class)
- Jitter meter (DB-3260 : Kenwood)
  (1) Use the following probe.
  RF IN: Probe with attenuator (10:1)
  (2) Adjust the zero point of the meter before turning on the meter's power.
  (3) Wait about 15 minutes after turning on the power to allow the meter to warm up before starting the measurements.
  (4) Set the switch as shown below.
  <Rear panel> FB PRESET .....40
  <Front panel> POLARITY .....⎍⎍
  FB CENTER ....2.5V
  MODE .....SIGMA
  RANGE .....60/200
  FUNCTION .....MEASURE
- Laser power meter (LE8010 : Leader)
  Zero point must be adjusted.
- Thermometer
- Test discs

| No. | Type | Description |
|---|---|---|
| 1 | AL disc | Play disc (TDYS1 : SONY) |
| 2 | MO disc A | Blank disc for recording (RDR-999) |
| 3 | MO disc B | Disc with test signals recorded on it (RDP-000) |

- Connect the ground terminal of the measuring unit's probe to VC.

## c. Adjustments

- Establish the service mode by pressing the MD EJECT button within one second after the ENT/YES button and REV MODE buttons have been pressed together. (Check that "T = 25 OK?" appears in the FL display area.)
- Use the jog dial to increase or decrease the adjustment value.
- Connect the measuring unit's probe to TP114 (TP_RF). Connect the ground terminal to TP113 (TP_VC).




| STEP | Adjustment Item |
|---|---|
| 1 | Temperature sensor offset compensation |
| 2 | Laser power adjustment (play) |
| 3 | Laser power adjustment (recording) |
| 4 | Pick-up initial position adjustment |
| 5 | Pre-mastered disc servo adjustment |
| 6 | Recordable disc play servo adjustment |
| 7 | Recordable disc recording servo adjustment |

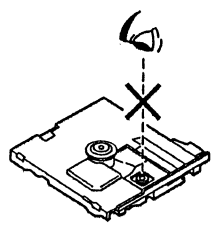
**1. Temperature sensor offset compensation**

Note: Perform this adjustment immediately after turning on the power when the temperature inside the unit will be the same as the ambient temperature.

- Turn the jog dial and set it to the current temperature.

**2. Laser power adjustment (play power)**

Note: The laser beam of the MD pick-up must NEVER be looked at directly from a position immediately above since its power is over 20 times greater than that for the CD.



(1) Press the ENT/YES button. ("LdSensor" appears on the FL display.)
(2) Insert the sensor of the laser power meter. ("MO READ" appears on the FL display.)
(3) Turn loading motor by hand, and put DISC up 3 mm.
(4) Turn the jog dial and adjust it in such a way that the laser power meter reading is set to 0.71 ± 0.05 mW.

**3. Laser power adjustment (recording power)**

(1) Press the ENT/YES button. ("Write" appears on the FL display.)
(2) Turn the jog dial and adjust it in such a way that the laser power meter reading is set to 6.85 ± 0.05 mW.

**4. Pick-up initial position adjustment (automatic adjustment)**

(1) Press the ENT/YES button. ("LdPreRec" appears on the FL display.)
(2) Insert the AL disc (TDYS1).
(3) The " •• 0ms " display appears for several seconds. ( •• is incremented or decremented from 10.)

**5. Pre-mastered disc servo adjustment**

(1) The FL display changes to "PreRec."
(2) Upon completion of the servo automatic adjustment, "A +00" appears on the FL display.
(3) When the jog dial is turned clockwise (" A +•• " appears on the FL display), the jitter value increases. Turn the dial until the value is set to 25ns.
(4) Press the ENT/YES button. (" B +00 " appears on the FL display.)
(5) When the jog dial is turned counterclockwise (" B - •• " appears on the FL display), the jitter value increases. Turn the dial until the value is set to 25ns.
(6) Press the ENT/YES button. (The disc is ejected and "LdRead" appears on the FL display.)





**6. Recordable disc play servo adjustment**

(1) Insert MO disc B (RDP-000).
(2) "Recd Pit" appears on the FL display. Upon completion of the servo automatic adjustment for the pit area, "A +00" appears on the FL display.
(3) When the jog dial is turned clockwise ("A +••" appears on the FL display), the jitter value increases. Turn the dial until the value is set to 25 ns.
(4) Press the ENT/YES button. ("B +00" appears on the FL display.)
(5) When the jog dial is turned counterclockwise ("B -••" appears on the FL display), the jitter value increases. Turn the dial until the value is set to 25 ns.
(6) Press the ENT/YES button.
(7) "Recd Grv" appears on the FL display. Upon completion of the servo automatic adjustment in the groove area, "A +00" appears on the FL display.
(8) When the jog dial is turned clockwise ("A +••" appears on the FL display), the jitter value increases. Turn the dial until the value is set to 28ns.
(9) Press the ENT/YES button. ("B +00" appears on the FL display.)
(10) When the jog dial is turned counterclockwise ("B -••" appears on the FL display), the jitter value increases. Turn the dial until the value is set to 28ns.
(11) Press the ENT/YES button. (The disc is ejected and "LdWrite" appears on the FL display.)

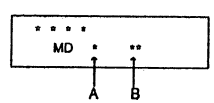
**7. Recordable disc recording servo adjustment**

(1) Insert MO disc A (RDR-999).
(2) "Rec Pwr" appears on the FL display. Upon completion of the servo automatic adjustment for the recording power, the FL display changes to "Complete," and the disc is ejected.
(3) Disconnect the AC cord.

## d. MO disc record/play performance inspections and checks

- In order to check the lens position of the pick-up, conduct the checks with the unit laid flat.

(1) Connect the oscilloscope and jitter meter to the test point (TP114 = TP_RF).
(2) Establish the service (inspection) mode by pressing the AUTO button within one second after the ENT/YES button and REV MODE buttons have been pressed together. (Check that "Ld Disc" appears in the FL display area.)
(3) Insert MO disc A (blank disc for recording), and press the REC button.
(4) Check that the figure on the FL display is incremented from "0100."
(5) After recording for 10 or so seconds, press the STOP button.
(6) Press the PLAY button.
(7) Check that the figure on the top level of the FL display is incremented from "0100."




A : CRC error
B : C1 error

(8) Check the eye pattern waveforms on the oscilloscope.
(9) Check the error rate on the FL display and the jitter value on the jitter meter.
C1 error : Less than 50
Jitter : Less than 28ns
(10) Press the STOP button. After stopping playback, press the MD EJECT button to eject the disc.
(11) Disconnect the AC cord.

## Main check flow

- Is "NO DISC" displayed or is TOC read operation performed when the MD position is set?
  - No → See the "MD microcomputer fails to operate" item.
  - Yes ↓
- Is the disc drawn inside the unit when it is inserted?
  - No → See the "Disc fails to be loaded properly" item.
  - Yes ↓
- Is the TOC data read properly?
  - No → See the "TOC reading" item.
  - Yes ↓
- Is play mode (with time display counting up) established?
  - No → Check the "Play" item.
  - Yes ↓
- Are audio signals OK?
  - No → Check the "Audio signals" item.
  - Yes ↓
- Is record/play operation performed?
  - No → Check the "Record/play" item.

## MD microcomputer fails to operate.

- Is 5V supplied to P5V and D5V of CN571, and is 3.3V supplied to AVDD?
  - No → Check the "MD power is not supplied" item.
  - Yes ↓
- Is 3.3V output to IC561 pin 3?
  - No → Check IC561.
  - Yes ↓
- Are signals outputs to IC551 pins 34~38?
  - No → Check X5201 oscillation and connections of IC568 and IC569.

## MD power is not supplied.

- Is the MDPCON pin of SYSCON PWB CN151 set to high?
  - No → Check the connections with IC151.
  - Yes ↓
- Is approx. 7.5V output to AMP PWB IC415 pin 1?
  - No → Check the AMP PWB, Q4902, Q4904 and Q4908 peripheral circuits. Check the continuity of PR403.
  - Yes ↓
- Is 5V output to IC415 pin 3?
  - No → Check IC415.
  - Yes ↓

Check the CN422 connections.





## Disc fails to be loaded properly.

- Does the power come on when a disc is loaded?
  - No → Check that HDCADY SW level changes from high to low.
  - Yes ↓
- Is the disc drawn inside the unit?
  - No → Check that the IC551 pin 97 level changes from low to high. Check that the voltage between both ends of CN504 changes to 2.2V.
  - Yes ↓
- Is the disc ejected without the "NO DISC" display appearing?
  - No → Check that the LOADING SW level changes from high to low when the disc is drawn down inside the unit.
  - Yes ↓

See "Pick-up initial return."

## TOC reading.

If TOC is read, it can be assumed that the play operation is more or less OK.

- Does the pick-up move to the initial position when a disc is inserted?
  - No → Check the "Pick-up initial return" item.
  - Yes ↓
- Is the laser power OK?
  - No → Check the "Laser power" item.
  - Yes ↓
- Does the spindle motor operate for a fixed period of time at the start?
  - No → Check the "Spindle kick" item.
  - Yes ↓
- Does the pick-up lens approach the disc first and then move away (focus search)?
  - No → Check the "Focus search" item.
  - Yes ↓
- Is the RF signal quite acceptable? (Is the eye opened acceptably?)
  - No → Check the "Focus servo" item.
  - Yes ↓

Check the IC523 connections.

For recordable discs only

- In the case of a recordable disc, does the pick-up access the area a little toward the outer perimeter after having traced the inside perimeter area?
  - Yes ↓
- Is the spindle rotation after access OK?
  - No → Check the "Recordable area spindle servo" item.
  - Yes ↓
- Is the tracking error signal after access disturbed?
  - Yes → Check the "Recordable area tracking servo" item.
  - No ↓
- In the case of an already recorded disc, is the RF signal acceptable?
  - No → Check the "Recordable area RF signal" item.

**Pick-up initial return**

Initial operation after power is turned on.

- Does the pick-up first move toward the outer perimeter and stop?
  - No → The IC551 pin 91 level remains low. Check R5521 and the wiring.
  - Yes ↓
- Does the pick-up move toward the inner perimeter and stop?
  - No → The IC551 pin 91 level fails to be set low. Check the wiring.
  - Yes ↓
- Are the signals output to IC521 pins 91 and 92?
  - Yes → Check IC531, and check the CN502 connections.
  - No ↓
- Is XRST high and is the signal output to SCLK, XLAT and SWDT?
  - Yes → Check the IC521 connections.
  - No → Check the IC551 connections.

**Laser power check**

Checks are conducted in the adjustment mode.

- Is approx. 0.2V during recording and approx. -1.5V during play output between APCREF and VC?
  - No → Check the IC521 circuits and connections.
  - Yes ↓
- Is approx. 0.2V during recording and approx. -1.5V during play output between PD and VC?
  - No → Check that LDON is high and MODON is high. Check that WRPWR is set high by the recording power and low by the play power.
  - Yes ↓
- Is the voltage between IOP and VCC approx. 0.1V during play and approx. 0.4V during recording?
  - No → Pick-up is shorted or damaged. (Replace it.)

**Spindle kick**

First, the spindle is rotated for a fixed period of time.

- Is the voltage between CN502 (SP+) and (SP-) approx. 3.1V?
  - Yes → Check the CN502 wiring, and check the mechanism.
  - No ↓
- Are the signals output to IC521 pins 93 and 94?
  - Yes → Check IC531.
  - No ↓
- Is the IC521 pin 10 (XRST) set high? Are the connections of pins 5 to 8 OK?
  - Yes → Check the connections.





**Focus search**

First, the lens is brought close to the disc and then moved away to find the focus point.

- Are the signals output to IC521 pins 88 and 89?
  - Yes → Check the IC531 circuits and the CN501 FCS+ and FCS- connection.
  - No ↓
- Check the IC521 connections.

**Focus servo**

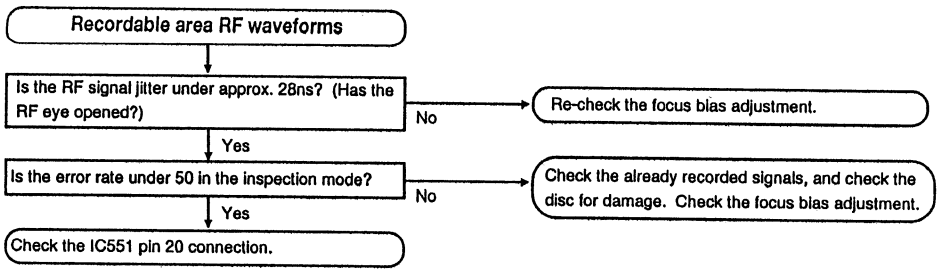
- Is the focus search discontinuous? (Is focusing successful even for a moment, and is the servo ON operation performed?)
  - Yes → Check the connections from pin 4 to pin 7 of IC511. Check the connections from IC511 pin 34 to IC521 pin 65.
  - No ↓
- Does the MNTO (FOK) level change from low to high?
  - No → Check the connections from pin 4 to pin 7 of IC511. Check the MNTO (FOK) pin contact.
  - Yes ↓
- Is an S-curve signal output to FEI near where the MNTO (FOK) level is set high?
  - No → Check the connections from pin 4 to pin 7 of IC511. Check the pin 34 connection.
  - Yes → Check the IC521 pin 9 (SENS) connection.

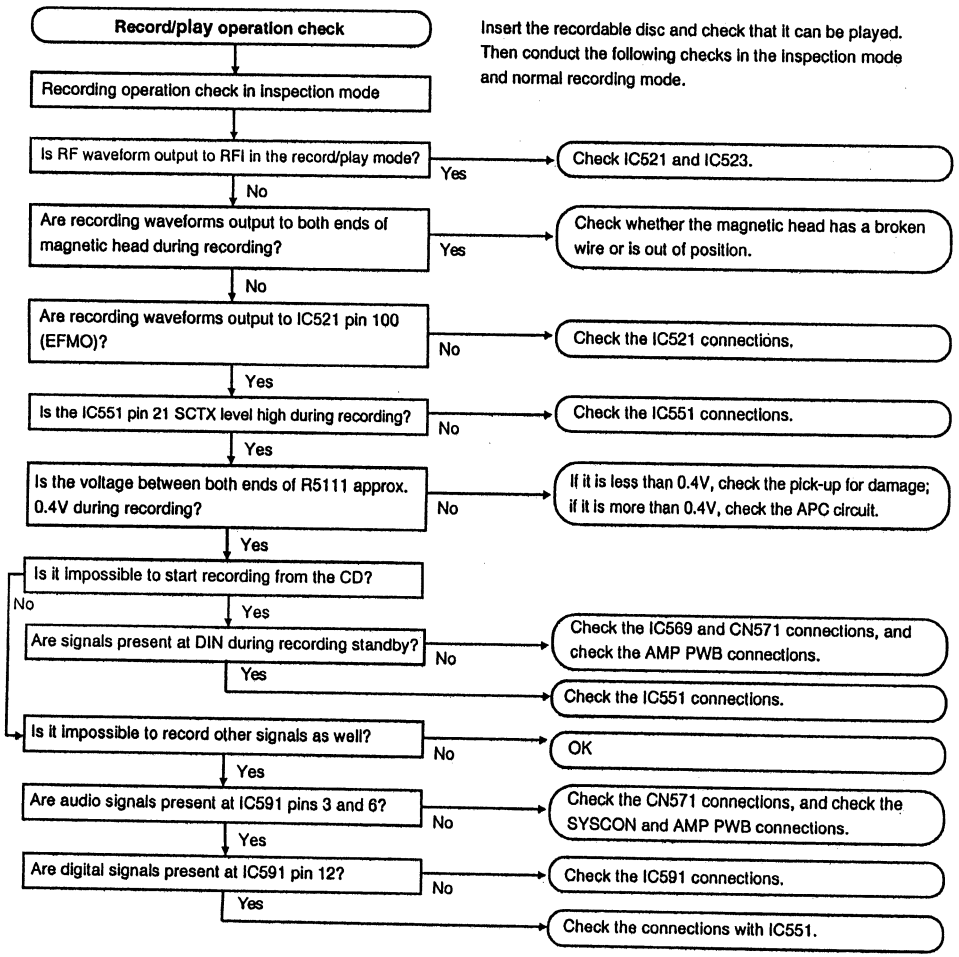
**Recordable area spindle servo**

- Is the RF signal output to RFI?
  - No → Check the connections of IC511 pins 16, 17 and 18 and of IC521 pins 82, 81 and 80.
  - Yes ↓
- Is a sine wave signal output to ADIPFM?
  - No → Check the IC511 pin 25, 31 and 43 connections.
  - Yes ↓
- Is an approx. 22 kHz signal output to ADFG?
  - No → Check the IC511 pin 29 and 30 connections.

**Recordable area tracking servo**

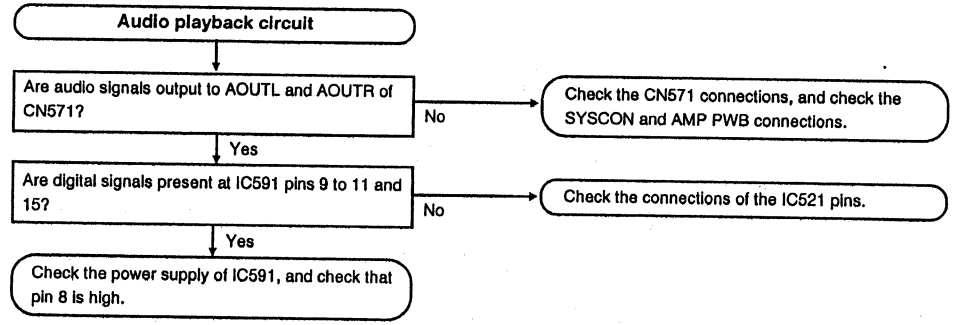
- Does the small-groove jump operation after multi-groove access fail to be completed satisfactorily?
  - Yes → Check the IC521 pin 62, 63 and 64 connections.
  - No ↓
- Is the TEO waveform on track?
  - No → Check the connections of IC511 pins 16, 17 and 18 and of IC521 pins 82, 81 and 80.

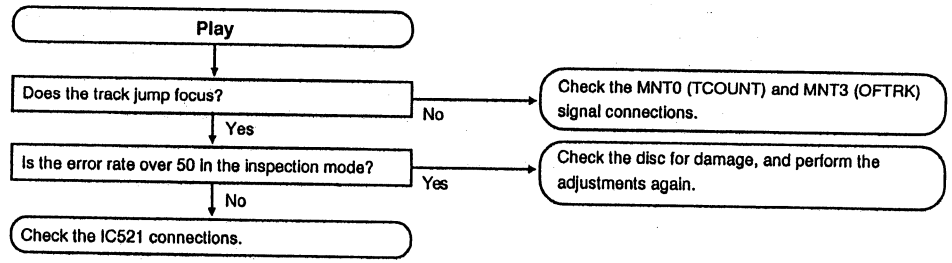

Recordable area RF waveforms
Is the RF signal jitter under approx. 28ns? (Has the RF eye opened?)
No
Re-check the focus bias adjustment.
Yes
Is the error rate under 50 in the inspection mode?
No
Check the already recorded signals, and check the disc for damage. Check the focus bias adjustment.
Yes
Check the IC551 pin 20 connection.


Record/play operation check
Insert the recordable disc and check that it can be played. Then conduct the following checks in the inspection mode and normal recording mode.
Recording operation check in inspection mode
Is RF waveform output to RFI in the record/play mode?
Yes
Check IC521 and IC523.
No
Are recording waveforms output to both ends of magnetic head during recording?
Yes
Check whether the magnetic head has a broken wire or is out of position.
No
Are recording waveforms output to IC521 pin 100 (EFMO)?
No
Check the IC521 connections.
Yes
Is the IC551 pin 21 SCTX level high during recording?
No
Check the IC551 connections.
Yes
Is the voltage between both ends of R5111 approx. 0.4V during recording?
No
If it is less than 0.4V, check the pick-up for damage; if it is more than 0.4V, check the APC circuit.
Yes
Is it impossible to start recording from the CD?
No
Yes
Are signals present at DIN during recording standby?
No
Check the IC569 and CN571 connections, and check the AMP PWB connections.
Yes
Check the IC551 connections.
Is it impossible to record other signals as well?
No
OK
Yes
Are audio signals present at IC591 pins 3 and 6?
No
Check the CN571 connections, and check the SYSCON and AMP PWB connections.
Yes
Are digital signals present at IC591 pin 12?
No
Check the IC591 connections.
Yes
Check the connections with IC551.

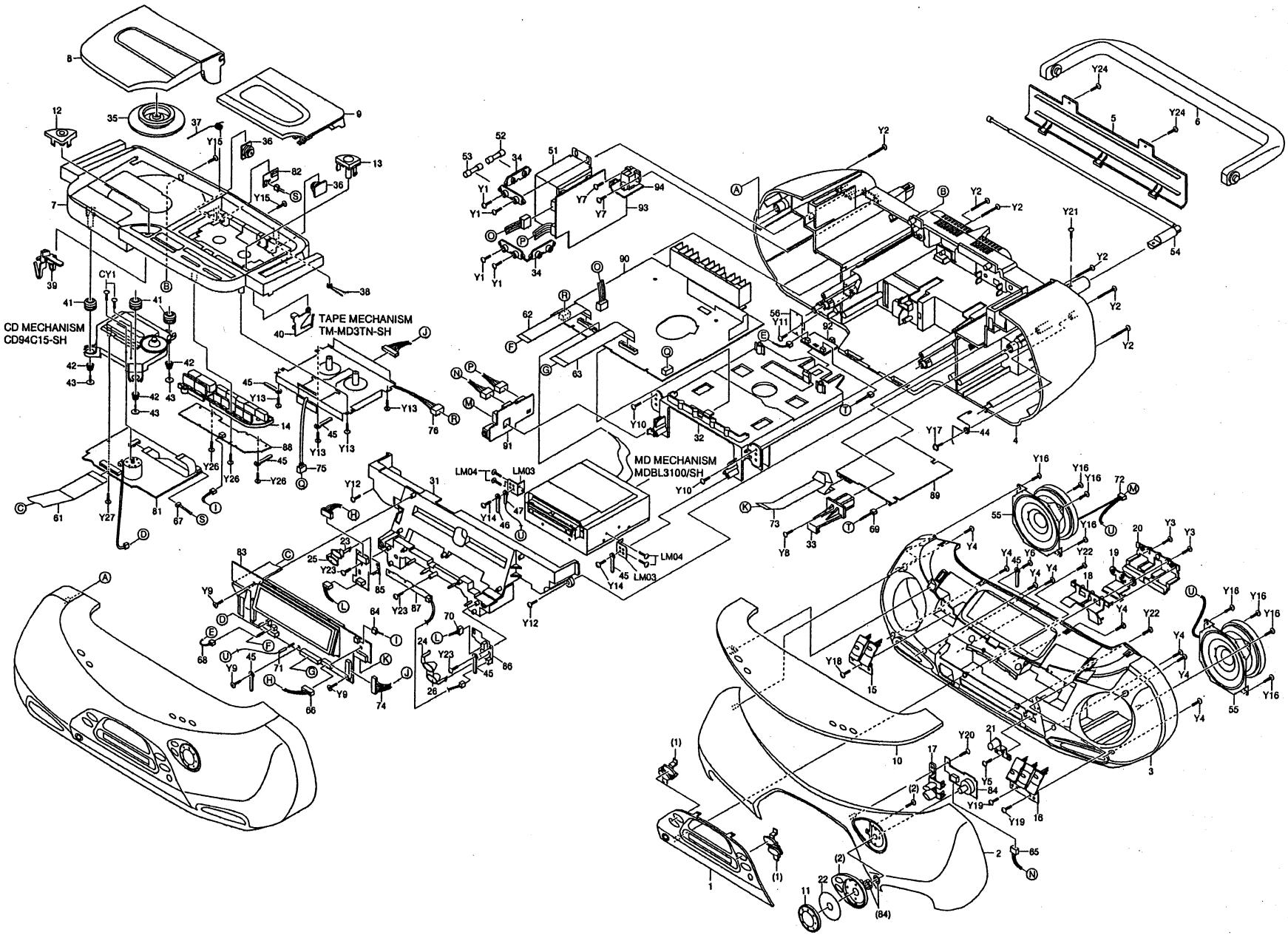





Audio playback circuit
Are audio signals output to AOUTL and AOUTR of CN571?
No
Check the CN571 connections, and check the SYSCON and AMP PWB connections.
Yes
Are digital signals present at IC591 pins 9 to 11 and 15?
No
Check the connections of the IC521 pins.
Yes
Check the power supply of IC591, and check that pin 8 is high.


Play
Does the track jump focus?
No
Check the MNT0 (TCOUNT) and MNT3 (OFTRK) signal connections.
Yes
Is the error rate over 50 in the inspection mode?
Yes
Check the disc for damage, and perform the adjustments again.
No
Check the IC521 connections.

## EXPLODED VIEW (CABINET & CHASSIS)



## PARTS LIST

### PRODUCT SAFETY NOTICE

*EACH PRECAUTION IN THIS MANUAL SHOULD BE FOLLOWED DURING SERVICING. COMPONENTS IDENTIFIED WITH THE IEC SYMBOL ⚠ IN THE PARTS LIST AND THE SCHEMATIC DIAGRAM DESIGNATED COMPONENTS IN WHICH SAFETY CAN BE OF SPECIAL SIGNIFICANCE. WHEN REPLACING A COMPONENT IDENTIFIED BY ⚠, USE ONLY THE REPLACEMENT PARTS DESIGNATED, OR PARTS WITH THE SAME RATINGS OF RESISTANCE, WATTAGE OR VOLTAGE THAT ARE DESIGNATED IN THE PARTS LIST IN THIS MANUAL. LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS MUST BE MADE TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE PRODUCT TO THE CUSTOMER.*

**CAUTION :** Regular type resistors and capacitors are not listed. To know those values, refer to the schematic diagram.
Regular type resistors are less than 1/4 W carbon type and 0 ohm chip resistors.
Regular type capacitors are less than 50 V and less than 1000 µF type of Ceramic type and Electrical type.

**N.S.P :** Not available as service parts.

### PACKING & ACCESSORIES

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | 614 298 2068 | CARTON CASE (XE) |
| | 614 297 4933 | CARTON CASE (UK) |
| | 614 287 6800 | CUSHION,TOP |
| | 614 287 6817 | CUSHION,BOTTOM |
| | 614 290 3360 | CUSHION,CARTON |
| | 645 011 1341 | POLY SHEET,800X800,SET (XE) |
| | 614 228 0331 | SHEET,800X800,SET COVER (UK) |
| | 614 298 2075 | INSTRUCTION MANUAL (XE) |
| | 614 298 2082 | INSTRUCTION MANUAL (UK) |
| | 645 020 7020 | ASSY,ANTENNA,LOOP |
| | 645 028 0597 | REMOTE CONTROL,RB-MD3100 |
| | 614 285 3993 | BATTERY COVER,REMOTE CONTROL |
| | ⚠ 645 006 4630 | PLUG,ADAPTOR AC (XE) |
| or | ⚠ 645 017 2175 | PLUG,ADAPTOR AC (XE) |
| | ⚠ 614 235 7859 | POWER CORD (XE) |
| or | ⚠ 614 023 1779 | POWER CORD (XE) |
| | ⚠ 645 007 1416 | POWER CORD (UK) |
| or | ⚠ 645 005 7137 | POWER CORD (UK) |

### CABINET & CHASSIS

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 1 | 614 297 3844 | ASSY,PANEL FRONT |
| 2 | 614 295 4898 | ASSY,PANEL NET |
| 3 | 614 295 5598 | ASSY,CABINET |
| 4 | 614 297 4704 | ASSY,CABINET,REAR (XE) |
| 4 | 614 297 4711 | ASSY,CABINET,REAR (UK) |
| 5 | 614 299 2685 | LID,BATTERRY |
| 6 | 614 295 5758 | HANDLE |
| 7 | 614 297 3899 | PANEL,TOP,C-CASS |
| 8 | 614 295 5772 | LID,CD |
| 9 | 614 297 4025 | ASSY,LID CASSETTE |
| 10 | 614 297 4063 | DEC,WINDOW,FL |
| 11 | 614 286 1325 | KNOB,ROTARY,JOG |
| 12 | 614 295 5680 | BUTTON,CD,EJECT |
| 13 | 614 295 5666 | BUTTON,EJECT,MECHA |
| 14 | 614 295 5673 | BUTTON,TOP,MECHA |
| 15 | 614 286 1257 | BUTTON,POWER |
| 16 | 614 286 1240 | BUTTON,MD,MODE |
| 17 | 614 297 4056 | BUTTON,JOG |
| 18 | 614 286 1158 | BUTTON,1,MD |
| 19 | 614 286 1165 | BUTTON,2,MD |
| 20 | 614 286 1172 | BUTTON,3,MD |
| 21 | 614 286 1202 | BUTTON,MD,EJECT |
| 22 | 614 285 6291 | DEC,SHEET JOG |
| 23 | 614 286 1417 | MOUNTING,LED(L) |
| 24 | 614 286 5316 | MOUNTING,LED(R) |
| 25 | 614 286 1301 | DEC,SHEET,BUTTON,LED(L) |
| 26 | 614 286 1318 | DEC,SHEET,BUTTON,LED(R) |
| 31 | 614 286 1387 | MOUNTING,SYSCON |
| 32 | 614 297 6654 | MOUNTING,MD |
| 33 | 614 271 5130 | MOUNTING,TU FIX |
| 34 | 614 272 3852 | MOUNTING,TRANS |
| 35 | 614 277 6780 | ASSY,PULLEY |
| 36 | 614 270 8316 | ASSY,GEAR,CD/CASSETTE |
| 37 | 614 284 7084 | SPRING,WIRE,LID CD |
| 38 | 614 290 9195 | SPRING,WIRE CASSETTE,LID |
| 39 | 614 286 1363 | LEVER,CD,EJECT |
| 40 | 614 285 3634 | LEVER,EJECT,MECHA |
| 41 | 614 270 2178 | DAMPER,CD-MECHA |
| 42 | 614 240 8308 | SPRING,COMP,CD-MECHA |
| 43 | 412 032 6408 | SPECIAL SCREW,CD-MECHA |
| 44 | 614 285 3795 | SPRING,WIRE,ROD ANT |
| 45 | 614 129 9136 | LUG,LEAD FIX |
| 46 | 614 130 0382 | LUG,LEAD DRESS |
| 47 | 614 129 9082 | LUG,CN115 |
| 48 | 614 289 5696 | DEC,SHEET |
| | 614 258 3883 | CUSHION,CABINET REAR,3X15X23 |
| | 614 110 8414 | SHEET,MD-MECHA,8X12X0.2 |
| | 614 290 3926 | SPACER,PANEL TOP |
| | 614 298 5311 | SHIELD,PANEL TOP |
| | 614 289 7058 | CUSHION,PANEL,TOP |
| | 614 125 0601 | CUSHION,MOUNT, SYSCON PANEL,TOP |

### FIXING PARTS

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| Y01 | 411 026 4307 | SCR S-TPG PAN 3X25,TRANS |
| Y02 | 411 021 4906 | SCR S-TPG BIN 3X20,CABI-REAR |
| Y03 | 411 020 9407 | SCR S-TPG BRZ+FLG 3X14, BUTTON 1,2,3 |
| Y04 | 411 021 4005 | SCR S-TPG BIN 3X12,PANEL NET |
| Y05 | 411 021 4005 | SCR S-TPG BIN 3X12, BUTTON MD EJECT |
| Y06 | 411 021 4005 | SCR S-TPG BIN 3X12,LEAD FIX |
| Y07 | 411 021 4005 | SCR S-TPG BIN 3X12,AC SOCKET |
| Y08 | 411 021 4005 | SCR S-TPG BIN 3X12,TU PWB |
| Y09 | 411 021 4005 | SCR S-TPG BIN 3X12,SYS PWB |
| Y10 | 411 021 4005 | SCR S-TPG BIN 3X12,MOUNT MD |
| Y11 | 411 021 4005 | SCR S-TPG BIN 3X12, BATT PWB FOR CLOSE |
| Y12 | 411 021 4005 | SCR S-TPG BIN 3X12, MOUNT SYSCON |
| Y13 | 411 021 4005 | SCR S-TPG BIN 3X12,C-MECHA |
| Y14 | 411 021 4005 | SCR S-TPG BIN 3X12,MD MECHA |
| Y15 | 411 021 4104 | SCR S-TPG BIN 3X12,PANEL TOP |
| Y16 | 411 020 8905 | SCR S-TPG BRZ+FLG 3X10,SPEAKER |
| Y17 | 411 020 8905 | SCR S-TPG BRZ+FLG 3X10, ANT TERMINAL |
| Y18 | 411 021 3503 | SCR S-TPG BIN 3X10, BUTTON POWER |
| Y19 | 411 021 3503 | SCR S-TPG BIN 3X10, BUTTON MD MODE |
| Y20 | 411 022 3007 | SCR S-TPG FLT 3X12,BUTTON JOG |
| Y21 | 411 001 8801 | SCR BIN 3X6,ROD ANT |
| Y22 | 411 165 3803 | SCR S-TPG BIN 2.3X10,PANEL MD |





| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| Y23 | 411 098 4700 | SCR S-TPG BIN 2.3X8,F-SW PWB |
| Y24 | 411 170 7704 | SCR S-TPG BIN 2.3X8, LID BATTERY FOR CLOSE |
| Y26 | 411 165 3803 | SCR S-TPG BIN 2.3X10,T-SW PWB |
| Y27 | 411 022 8408 | SCR S-TPG PAN 2X8,PWB FIX |

### ELECTRICAL PARTS

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 51 | ⚠ 645 028 0580 | TRANS,POWER |
| 52 | ⚠ 423 016 8103 | FUSE 250V 4A |
| 53 | ⚠ 423 016 7908 | FUSE 250V 2.5A |
| 54 | 614 237 5051 | ANTENNA,ROD |
| or | 614 240 6564 | ANTENNA,ROD |
| 55 | 645 018 9616 | SPEAKER,3 |
| 56 | 614 284 9859 | PWB,BRACKET |
| 61 | 645 023 2565 | FLEXIBLE FLAT CABLE,CD-SYSCON |
| 62 | 645 023 2787 | FLEXIBLE FLAT CABLE,SYSCON-AMP |
| 63 | 645 026 6874 | FLEXIBLE FLAT CABLE,SYSCON-AMP |
| 64 | 645 023 3012 | CORD,ID CONNECTOR,SYSCON-SW |
| or | 614 291 0627 | ASSY,WIRE,SYSCON-SW |
| 65 | 645 023 3043 | CORD,ID CONNECTOR,JOG-H.P |
| 66 | 645 023 3050 | CORD,ID CONNECTOR,SYSCON-SW |
| 67 | 645 023 2985 | CORD,ID CONNECTOR,CD-SW |
| or | 614 291 0634 | ASSY,WIRE |
| 68 | 645 023 3029 | CORD,ID CONNECTOR, SYSCON-RESET |
| 69 | 645 023 2800 | CORD,ID CONNECTOR,TU-ANT |
| 70 | 645 023 3036 | CORD,ID CONNECTOR,SW-SW |
| 71 | 645 023 3067 | CORD,SOCKET,SYSCON-MD |
| 72 | 614 286 4449 | CORD,4P CONNECTOR,SPEAKER |
| 73 | 645 013 7891 | FLEXIBLE FLAT CABLE,TU-SYSCON |
| 74 | 645 023 2336 | CORD,ID CONNECTOR |
| 75 | 614 291 3079 | CORD,5P CONNECTOR |
| 76 | 614 286 4432 | CORD,4P CONNECTOR |

### CD P.W.BOARD ASSY

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 81 | 614 297 6241 | ASSY,PWB,CD (N.S.P) |
| CN141 | 645 012 5553 | SOCKET,FPC 22P,SYSCON |
| CN142 | 614 287 4813 | CORD,2P CONNECTOR,SYSCON |
| CN143 | 645 010 1472 | SOCKET,FPC 13P,CD MECHA |
| CN144 | 645 006 0908 | PLUG,2P,CD OPEN SW |
| IC131 | 409 419 4300 | IC CXA1782CQ |
| IC141 | ⚠ 409 390 8403 | IC BA5941FP |
| IC142 | 409 386 7502 | IC CXD2508AQ |
| IC143 | 409 192 7109 | IC BA15218F |
| or | 409 241 5506 | IC XRA15218F |
| PR101 | ⚠ 645 029 2446 | PROTECTOR,1A 125V |
| Q1301 | 405 008 7509 | TR 2SB815-B6 |
| or | 405 008 7707 | TR 2SB815-B7 |
| Q1302 | 405 002 0308 | TR 2SA1037K-R |
| or | 405 005 5508 | TR 2SA812-M6 |
| Q1451 | 405 006 4005 | TR 2SA952-L |
| or | 405 006 3909 | TR 2SA952-K |
| or | 405 007 6701 | TR 2SB598-F-NP |
| Q1454 | 405 000 1109 | TR DTA124EK |
| or | 405 113 8200 | TR FN1F4M |
| Q1782 | 405 014 4509 | TR 2SC2412K-R |
| or | 405 011 1006 | TR 2SC1623-L6 |
| Q1882 | 405 014 4509 | TR 2SC2412K-R |
| or | 405 011 1006 | TR 2SC1623-L6 |
| R1301 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1302 | 401 037 6506 | MT-GLAZE 12 JA 1/10W |
| R1303 | 401 038 6307 | MT-GLAZE 470 JA 1/10W |
| R1304 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R1305 | 401 038 5102 | MT-GLAZE 3.9K JA 1/10W |
| R1306 | 401 038 5102 | MT-GLAZE 3.9K JA 1/10W |
| R1307 | 401 038 3603 | MT-GLAZE 3.3K JA 1/10W |
| R1308 | 401 038 7700 | MT-GLAZE 5.6K JA 1/10W |
| R1309 | 401 037 8203 | MT-GLAZE 1.5M JA 1/10W |
| R1310 | 401 038 7809 | MT-GLAZE 56K JA 1/10W |
| R1311 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1312 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1313 | 401 038 0909 | MT-GLAZE 220K JA 1/10W |
| R1314 | 401 035 5204 | MT-GLAZE 10K JA 1/8W |
| R1315 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1316 | 401 037 9200 | MT-GLAZE 1.8K JA 1/10W |
| R1317 | 401 038 7809 | MT-GLAZE 56K JA 1/10W |
| R1319 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1320 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1321 | 401 037 6902 | MT-GLAZE 120K JA 1/10W |
| R1322 | 401 038 0701 | MT-GLAZE 2.2K JA 1/10W |
| R1323 | 401 038 7908 | MT-GLAZE 560K JA 1/10W |
| R1351 | 401 037 8104 | MT-GLAZE 150K JA 1/10W |
| R1352 | 401 035 8205 | MT-GLAZE 150K JA 1/8W |
| R1353 | 401 037 6902 | MT-GLAZE 120K JA 1/10W |
| R1354 | 401 037 8005 | MT-GLAZE 15K JA 1/10W |
| R1355 | 401 037 5707 | MT-GLAZE 100K JA 1/10W |
| R1357 | 401 037 0702 | MT-GLAZE 560K JA 1/8W |
| R1358 | 401 036 6903 | MT-GLAZE 390K JA 1/8W |
| R1359 | 401 037 6803 | MT-GLAZE 12K JA 1/10W |
| R1361 | 401 037 8104 | MT-GLAZE 150K JA 1/10W |
| R1362 | 401 039 0502 | MT-GLAZE 82K JA 1/10W |
| R1363 | 401 038 0800 | MT-GLAZE 22K JA 1/10W |
| R1368 | 401 038 5300 | MT-GLAZE 39K JA 1/10W |
| R1369 | 401 038 9407 | MT-GLAZE 680K JA 1/10W |
| R1401 | 401 038 0602 | MT-GLAZE 220 JA 1/10W |
| R1415 | 401 038 9308 | MT-GLAZE 68K JA 1/10W |
| R1416 | 401 038 5300 | MT-GLAZE 39K JA 1/10W |
| R1417 | 401 038 3702 | MT-GLAZE 33K JA 1/10W |
| R1418 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1419 | 401 038 2200 | MT-GLAZE 27K JA 1/10W |
| R1420 | 401 038 2200 | MT-GLAZE 27K JA 1/10W |
| R1441 | 401 038 7700 | MT-GLAZE 5.6K JA 1/10W |
| R1442 | 401 038 0602 | MT-GLAZE 220 JA 1/10W |
| R1443 | 401 035 5402 | MT-GLAZE 100K JA 1/8W |
| R1451 | 401 038 3603 | MT-GLAZE 3.3K JA 1/10W |
| R1452 | 401 038 3603 | MT-GLAZE 3.3K JA 1/10W |
| R1453 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1454 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1455 | 401 037 5707 | MT-GLAZE 100K JA 1/10W |
| R1456 | 401 035 4900 | MT-GLAZE 1K JA 1/8W |
| R1457 | 401 037 5806 | MT-GLAZE 1M JA 1/10W |
| R1458 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1459 | 401 038 6307 | MT-GLAZE 470 JA 1/10W |
| R1461 | 401 037 5707 | MT-GLAZE 100K JA 1/10W |
| R1462 | 401 037 7909 | MT-GLAZE 1.5K JA 1/10W |
| R1463 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1464 | 401 038 6307 | MT-GLAZE 470 JA 1/10W |
| R1465 | 401 038 6307 | MT-GLAZE 470 JA 1/10W |
| R1466 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1467 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1471 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1472 | 401 037 9309 | MT-GLAZE 18K JA 1/10W |
| R1474 | 401 037 5707 | MT-GLAZE 100K JA 1/10W |
| R1475 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1476 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1477 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1485 | 401 038 7601 | MT-GLAZE 560 JA 1/10W |
| R1491 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1492 | 401 038 7601 | MT-GLAZE 560 JA 1/10W |
| R1493 | 401 038 7601 | MT-GLAZE 560 JA 1/10W |

## PARTS LIST

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| R1781 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1782 | 401 038 0909 | MT-GLAZE 220K JA 1/10W |
| R1783 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1784 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1785 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1786 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1787 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1788 | 401 038 9209 | MT-GLAZE 6.8K JA 1/10W |
| R1789 | 401 038 9209 | MT-GLAZE 6.8K JA 1/10W |
| R1881 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1882 | 401 038 0909 | MT-GLAZE 220K JA 1/10W |
| R1883 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1884 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1885 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1886 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1887 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1888 | 401 038 9209 | MT-GLAZE 6.8K JA 1/10W |
| R1889 | 401 038 9209 | MT-GLAZE 6.8K JA 1/10W |
| S1301 | 645 012 5836 | SWITCH,LEAF |
| or | 645 019 2661 | SWITCH,LEAF |
| VR131 | 645 010 7597 | VR,SEMI,47K N |
| X1451 | 645 009 0790 | OSC,CRYSTAL 33.8688MHZ |

### CD OPEN SWITCH P.W.BOARD ASSY

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 82 | 614 297 7002 | ASSY,PWB,CD OPEN SW (N.S.P) |
| CN168 | 645 005 7366 | PLUG,2P,CD |
| S1681 | 614 249 1355 | SWITCH,LEVER |

### SYSCON P.W.BOARD ASSY

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 83 | 614 297 6944 | ASSY,PWB,SYSCON (N.S.P) |
| A1501 | 645 020 3695 | FLOURESCENT TUBE |
| AM151 | 614 112 1536 | DOUBLE FACE,FL HOLD |
| BR151 | 614 286 1400 | MOUNTING,FL |
| C1550 | 403 296 7508 | DL-ELECT 1F Z 5.5V |
| CN150 | 614 254 3597 | TERMINAL |
| or | 614 221 8273 | TERMINAL |
| CN151 | 645 012 5270 | SOCKET,FPC 23P,AMP |
| CN152 | 645 012 5249 | SOCKET,FPC 20P,AMP |
| CN153 | 645 012 5553 | SOCKET,FPC 22P,CD |
| CN154 | 645 006 0984 | PLUG,11P,TAPE MECHA |
| CN155 | 645 012 5461 | SOCKET,FPC 13P,TUNER |
| CN156 | 645 006 0861 | PLUG,7P,CD REC SW |
| CN157 | 645 006 0908 | PLUG,2P,CD/RADIO SW |
| CN158 | 645 005 7366 | PLUG,2P,AM ANT./RESET SW |
| CN159 | 645 005 9995 | PLUG,2P,CD |
| D1501 | 407 012 4406 | DIODE 1SS133 |
| D1502 | 407 012 4406 | DIODE 1SS133 |
| D1503 | 407 012 4406 | DIODE 1SS133 |
| D1504 | 407 012 4406 | DIODE 1SS133 |
| D1506 | 407 012 4406 | DIODE 1SS133 |
| D1507 | 407 012 4406 | DIODE 1SS133 |
| D1508 | 407 012 4406 | DIODE 1SS133 |
| D1513 | 407 012 4406 | DIODE 1SS133 |
| D1514 | 407 012 4406 | DIODE 1SS133 |
| D1517 | 407 159 0309 | PHOTO DIODE SPS-424-1 |
| D1521 | 407 148 6701 | DIODE 1A3-I |
| D1522 | 407 148 6701 | DIODE 1A3-I |
| D1523 | 407 148 6701 | DIODE 1A3-I |
| IC151 | 410 314 9000 | IC M38199MF-079FP |
| IC152 | 409 295 0007 | IC M66004FP |
| IC153 | 409 350 6807 | IC M62009FP |
| IC154 | 409 350 6906 | IC TC74VHC04F |
| IC155 | 409 195 1906 | IC M5278L56 |
| L1502 | 645 002 1459 | INDUCTOR,22U K |
| L1503 | 645 001 4666 | INDUCTOR,220U K |
| LG151 | 645 006 4425 | FIXER |
| Q1506 | 405 000 2908 | TR DTC114EK |
| or | 405 113 5902 | TR FA1A4M |
| Q1507 | 405 000 2908 | TR DTC114EK |
| or | 405 113 5902 | TR FA1A4M |
| Q1508 | 405 000 2908 | TR DTC114EK |
| or | 405 113 5902 | TR FA1A4M |
| Q1511 | 405 000 2908 | TR DTC114EK |
| or | 405 113 5902 | TR FA1A4M |
| Q1514 | 405 000 2908 | TR DTC114EK |
| or | 405 113 5902 | TR FA1A4M |
| Q1515 | 405 105 8201 | TR 2SB1132-Q |
| or | 405 105 8300 | TR 2SB1132-R |
| Q1516 | 405 000 2908 | TR DTC114EK |
| or | 405 113 5902 | TR FA1A4M |
| Q1517 | 405 105 8201 | TR 2SB1132-Q |
| or | 405 105 8300 | TR 2SB1132-R |
| Q1521 | 405 000 2908 | TR DTC114EK |
| or | 405 113 5902 | TR FA1A4M |
| Q1522 | 405 000 2908 | TR DTC114EK |
| or | 405 113 5902 | TR FA1A4M |
| Q1523 | 405 000 2908 | TR DTC114EK |
| or | 405 113 5902 | TR FA1A4M |
| Q1524 | 405 000 2908 | TR DTC114EK |
| or | 405 113 5902 | TR FA1A4M |
| Q1526 | 405 000 2908 | TR DTC114EK |
| or | 405 113 5902 | TR FA1A4M |
| Q1527 | 405 000 2908 | TR DTC114EK |
| or | 405 113 5902 | TR FA1A4M |
| Q1528 | 405 000 2908 | TR DTC114EK |
| or | 405 113 5902 | TR FA1A4M |
| Q1529 | 405 000 2908 | TR DTC114EK |
| or | 405 113 5902 | TR FA1A4M |
| Q1530 | 405 000 2908 | TR DTC114EK |
| or | 405 113 5902 | TR FA1A4M |
| Q1532 | 405 000 2908 | TR DTC114EK |
| or | 405 113 5902 | TR FA1A4M |
| Q1533 | 405 000 2908 | TR DTC114EK |
| or | 405 113 5902 | TR FA1A4M |
| Q1535 | 405 000 1109 | TR DTA124EK |
| or | 405 113 8200 | TR FN1F4M |
| Q1536 | 405 000 2908 | TR DTC114EK |
| or | 405 113 5902 | TR FA1A4M |
| R1001 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R1003 | 401 037 5004 | MT-GLAZE 0.000 ZA 1/10W |
| R1004 | 401 037 5004 | MT-GLAZE 0.000 ZA 1/10W |
| R1005 | 401 037 5004 | MT-GLAZE 0.000 ZA 1/10W |
| R1006 | 401 037 5004 | MT-GLAZE 0.000 ZA 1/10W |
| R1007 | 401 037 5004 | MT-GLAZE 0.000 ZA 1/10W |
| R1051 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R1052 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R1053 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R1054 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R1055 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R1056 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R1057 | 401 037 5004 | MT-GLAZE 0.000 ZA 1/10W |
| R1058 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R1059 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R1060 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R1061 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R1062 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R1063 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R1064 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R1065 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |





| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| R1066 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R1067 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R1068 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R1070 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R1501 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1502 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1503 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1507 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1508 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1510 | 401 037 5202 | MT-GLAZE 100 JA 1/10W |
| R1511 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1512 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1513 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1514 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1518 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1519 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R1520 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1521 | 401 037 5707 | MT-GLAZE 100K JA 1/10W |
| R1523 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1524 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1528 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1529 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1530 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1531 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1532 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1533 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1534 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1535 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1536 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1537 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1538 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1539 | 401 038 7601 | MT-GLAZE 560 JA 1/10W |
| R1546 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R1547 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1548 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1549 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R1551 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1552 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1554 | 401 038 0701 | MT-GLAZE 2.2K JA 1/10W |
| R1555 | 401 038 6307 | MT-GLAZE 470 JA 1/10W |
| R1556 | 401 038 6307 | MT-GLAZE 470 JA 1/10W |
| R1557 | 401 038 7502 | MT-GLAZE 56 JA 1/10W |
| R1560 | 401 094 1902 | MT-GLAZE 10M JA 1/10W |
| R1561 | 401 094 1902 | MT-GLAZE 10M JA 1/10W |
| R1562 | 401 037 8104 | MT-GLAZE 150K JA 1/10W |
| R1563 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1565 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1567 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1569 | 401 038 6208 | MT-GLAZE 47 JA 1/10W |
| R1570 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1571 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1572 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1573 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1574 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1575 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1580 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1582 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1584 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R1585 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1586 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1587 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1588 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1589 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1590 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R1591 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R1592 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R1593 | 401 038 5003 | MT-GLAZE 390 JA 1/10W |
| R1594 | 401 038 5003 | MT-GLAZE 390 JA 1/10W |
| R1595 | 401 038 6307 | MT-GLAZE 470 JA 1/10W |
| R1596 | 401 038 7601 | MT-GLAZE 560 JA 1/10W |
| R1598 | 614 253 8050 | RESISTOR |
| R1599 | 614 253 8050 | RESISTOR |
| S1501 | 645 006 2827 | SWITCH,PUSH 1P-1T |
| or | 614 220 5495 | SWITCH,TACT |
| or | 614 240 1088 | SWITCH,TACT |
| S1502 | 645 006 2827 | SWITCH,PUSH 1P-1T |
| or | 614 220 5495 | SWITCH,TACT |
| or | 614 240 1088 | SWITCH,TACT |
| S1503 | 645 006 2827 | SWITCH,PUSH 1P-1T |
| or | 614 220 5495 | SWITCH,TACT |
| or | 614 240 1088 | SWITCH,TACT |
| S1504 | 645 006 2827 | SWITCH,PUSH 1P-1T |
| or | 614 220 5495 | SWITCH,TACT |
| or | 614 240 1088 | SWITCH,TACT |
| S1505 | 645 006 2827 | SWITCH,PUSH 1P-1T |
| or | 614 220 5495 | SWITCH,TACT |
| or | 614 240 1088 | SWITCH,TACT |
| SH151 | 614 267 7506 | SHIELD |
| X1501 | 645 027 5487 | OSC,CERAMIC 8MHZ |
| X1502 | 614 252 7627 | RESONATOR,XTAL |
| XF151 | 645 025 6455 | FILTER,EMI 270PF |

### JOG SWITCH P.W.BOARD ASSY

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 84 | 614 297 6951 | ASSY,PWB,JOG SW (N.S.P) |
| CN161 | 645 006 0922 | PLUG,5P,HEADPHONE |
| R1601 | 401 038 5003 | MT-GLAZE 390 JA 1/10W |
| R1602 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R1603 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| S1601 | 645 021 0990 | SWITCH,ROTARY(ENCODER) |
| S1602 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |
| S1603 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |

### CD REC SWITCH P.W.BOARD ASSY

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 85 | 614 297 6968 | ASSY,PWB,CD REC SW (N.S.P) |
| CN162 | 645 006 0946 | PLUG,7P,SYSCON |
| CN163 | 645 005 9292 | PLUG,5P,MD REC SW |
| D1611 | 408 020 2705 | LED SLP-4117E-51-T1 |
| D1612 | 408 020 2606 | LED SLP-3117E-51S-T1 |
| Q1611 | 405 000 1109 | TR DTA124EK |
| or | 405 113 8200 | TR FN1F4M |
| Q1612 | 405 000 1109 | TR DTA124EK |
| or | 405 113 8200 | TR FN1F4M |
| R1611 | 401 038 5003 | MT-GLAZE 390 JA 1/10W |
| R1612 | 401 038 6307 | MT-GLAZE 470 JA 1/10W |
| R1613 | 401 037 7800 | MT-GLAZE 150 JA 1/10W |
| R1614 | 401 037 7800 | MT-GLAZE 150 JA 1/10W |
| R1615 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1616 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| S1611 | 614 220 5433 | SWITCH,TACT |
| or | 614 240 0982 | SWITCH,TACT |
| S1612 | 645 006 2827 | SWITCH,PUSH 1P-1T |
| or | 614 220 5495 | SWITCH,TACT |
| or | 614 240 1088 | SWITCH,TACT |

## PARTS LIST

### MD REC SWITCH P.W.BOARD ASSY

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 86 | 614 297 6975 | ASSY,PWB,MD REC SW (N.S.P) |
| CN164 | 645 005 9292 | PLUG,5P,CD REC SW |
| CN165 | 645 005 7366 | PLUG,2P,MD SW |
| D1621 | 408 020 2606 | LED SLP-3117E-51S-T1 |
| D1622 | 408 020 2606 | LED SLP-3117E-51S-T1 |
| Q1621 | 405 000 1109 | TR DTA124EK |
| or | 405 113 8200 | TR FN1F4M |
| Q1622 | 405 000 1109 | TR DTA124EK |
| or | 405 113 8200 | TR FN1F4M |
| R1621 | 401 038 7601 | MT-GLAZE 560 JA 1/10W |
| R1622 | 401 038 9001 | MT-GLAZE 680 JA 1/10W |
| R1623 | 401 039 0304 | MT-GLAZE 820 JA 1/10W |
| R1624 | 401 037 7800 | MT-GLAZE 150 JA 1/10W |
| R1625 | 401 037 7800 | MT-GLAZE 150 JA 1/10W |
| R1626 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R1627 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| S1621 | 645 006 2827 | SWITCH,PUSH 1P-1T |
| or | 614 220 5495 | SWITCH,TACT |
| or | 614 240 1088 | SWITCH,TACT |
| S1622 | 645 006 2827 | SWITCH,PUSH 1P-1T |
| or | 614 220 5495 | SWITCH,TACT |
| or | 614 240 1088 | SWITCH,TACT |
| S1623 | 614 220 5433 | SWITCH,TACT |
| or | 614 240 0982 | SWITCH,TACT |

### MD SWITCH P.W.BOARD ASSY

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 87 | 614 297 6982 | ASSY,PWB,MD SW (N.S.P) |
| CN166 | 645 009 9281 | CORD,ID-CONNECTOR,MD REC SW |
| R1631 | 401 037 6704 | MT-GLAZE 1.2K JA 1/10W |
| R1632 | 401 037 7909 | MT-GLAZE 1.5K JA 1/10W |
| R1633 | 401 038 0701 | MT-GLAZE 2.2K JA 1/10W |
| R1634 | 401 038 3603 | MT-GLAZE 3.3K JA 1/10W |
| R1635 | 401 038 7700 | MT-GLAZE 5.6K JA 1/10W |
| S1631 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |
| S1632 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |
| S1633 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |
| S1634 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |
| S1635 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |

### CD / RADIO SWITCH P.W.BOARD ASSY

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 88 | 614 297 6999 | ASSY,PWB,CD/RADIO SW (N.S.P) |
| CN167 | 645 006 0908 | PLUG,2P,SYSCON |
| R1641 | 401 038 5003 | MT-GLAZE 390 JA 1/10W |
| R1642 | 401 038 5003 | MT-GLAZE 390 JA 1/10W |
| R1643 | 401 038 6307 | MT-GLAZE 470 JA 1/10W |
| R1644 | 401 038 7601 | MT-GLAZE 560 JA 1/10W |
| R1645 | 401 038 9001 | MT-GLAZE 680 JA 1/10W |
| R1646 | 401 039 0304 | MT-GLAZE 820 JA 1/10W |
| R1647 | 401 037 6704 | MT-GLAZE 1.2K JA 1/10W |
| R1648 | 401 037 7909 | MT-GLAZE 1.5K JA 1/10W |
| R1649 | 401 038 0701 | MT-GLAZE 2.2K JA 1/10W |
| R1650 | 401 038 3603 | MT-GLAZE 3.3K JA 1/10W |
| R1651 | 401 038 7700 | MT-GLAZE 5.6K JA 1/10W |
| R1652 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| S1641 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |
| S1642 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |
| S1643 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |
| S1644 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |
| S1645 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |
| S1646 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |
| S1647 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |
| S1648 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |
| S1649 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |
| S1650 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |
| S1651 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |
| S1652 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |
| S1653 | 645 006 5958 | SWITCH,PUSH 1P-1T |
| or | 614 220 5471 | SWITCH,TACT |

### TUNER P.W.BOARD ASSY

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 89 | 614 297 6937 | ASSY,PWB,TUNER (N.S.P) |
| C2131 | 403 082 0201 | POLYPRO 470P J 100V |
| C2214 | 403 154 2102 | NP-ELECT 1U M 50V |
| CN201 | 645 012 5461 | SOCKET,FPC 13P |
| CN202 | 645 004 2683 | PLUG,2P |
| CN211 | 614 254 3597 | TERMINAL |
| or | 614 221 8273 | TERMINAL |
| CT201 | 645 017 2687 | TRIMMER,10PF |
| or | 614 007 6356 | TRIMMER |
| or | 645 012 7731 | TRIMMER,11PF |
| D2001 | 407 007 9904 | DIODE GMA01 |
| or | 407 012 4406 | DIODE 1SS133 |
| D2002 | 407 157 5702 | KV1370NT1 |
| D2003 | 407 157 5702 | KV1370NT1 |
| D2101 | 407 007 9904 | DIODE GMA01 |
| or | 407 012 4406 | DIODE 1SS133 |
| D2102 | 407 154 7501 | VARACTOR DI SVC344 |
| D2105 | 407 007 9904 | DIODE GMA01 |
| or | 407 012 4406 | DIODE 1SS133 |
| IC201 | 409 016 0200 | IC LA1186N-AUDIO |
| IC211 | 409 379 2705 | IC LA1832ML |
| IC221 | 409 378 4205 | IC LC72131MD |
| L2001 | 645 012 0664 | INDUCTOR,AIR 0.1U |
| L2002 | 614 035 0494 | V.H.F COIL |
| or | 614 229 0231 | V.H.F COIL |
| L2003 | 645 002 1534 | INDUCTOR,8.2U K |
| L2102 | 614 253 4656 | TRANS,RF |
| L2204 | 614 253 4649 | TRANS,OSC |
| Q2001 | 405 016 0806 | TR 2SC2839-E |
| Q2002 | 405 018 7902 | TR 2SC380TM-O |
| or | 405 016 0608 | TR 2SC2839-D |
| Q2101 | 405 036 3702 | TR 2SA1564 |
| or | 405 000 0904 | TR DTA114YS |
| Q2102 | 405 037 0809 | TR 2SC4048 |
| Q2110 | 405 016 0806 | TR 2SC2839-E |
| Q2201 | 405 036 3702 | TR 2SA1564 |
| or | 405 000 0904 | TR DTA114YS |
| Q2202 | 405 037 0809 | TR 2SC4048 |





| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| Q2206 | 405 036 3702 | TR 2SA1564 |
| or | 405 000 0904 | TR DTA114YS |
| Q2207 | 405 082 4609 | TR DTA123YS |
| SH201 | 614 256 3052 | SHIELD |
| SH202 | 614 256 3052 | SHIELD |
| X2101 | 614 246 0870 | RESONATOR |
| or | 645 010 0024 | OSC,CERAMIC 456KHZ |
| X2201 | 614 229 2457 | CRYSTAL |
| XF201 | 614 252 1045 | FILTER,LC |
| XF211 | 614 229 3805 | FILTER |
| or | 645 009 3609 | CERAMIC FILTER 10.65MHZ |
| XF212 | 614 229 3805 | FILTER |
| or | 645 009 3609 | CERAMIC FILTER 10.65MHZ |
| XF213 | 614 246 0849 | FILTER |
| XF214 | 645 006 7624 | DISCR,CERAMIC |
| or | 645 008 5680 | DISCR,CERAMIC |

### AMPLIFIER P.W.BOARD ASSY

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 90 | 614 298 2464 | ASSY,PWB,AMP (N.S.P) |
| C4748 | 403 175 1009 | MT-POLYEST 0.15U J 50V |
| C4751 | 403 330 2001 | ELECT 2200U M 16V |
| C4848 | 403 175 1009 | MT-POLYEST 0.15U J 50V |
| C4851 | 403 330 2001 | ELECT 2200U M 16V |
| C4901 | 403 062 9507 | POLYESTER 6800P J 50V |
| C4902 | 403 063 5300 | POLYESTER 8200P J 50V |
| C4929 | 403 330 2209 | ELECT 6800U M 25V |
| C4936 | 403 330 2001 | ELECT 2200U M 16V |
| C4940 | 403 330 2100 | ELECT 6800U M 16V |
| C4965 | 403 168 6103 | MT-POLYEST 0.1U J 50V |
| CN401 | 645 005 1111 | JACK,PHONE D3.6 |
| CN402 | 614 229 3812 | JACK |
| or | 645 013 8621 | JACK,PHONE D3.6 |
| CN411 | 645 005 9292 | PLUG,5P,TAPE MECHA HEAD |
| or | 645 007 0082 | PLUG,5P,TAPE MECHA HEAD |
| CN412 | 645 005 8110 | PLUG,4P,TAPE MECHA MOTOR |
| or | 645 007 0075 | PLUG,4P,TAPE MECHA MOTOR |
| CN413 | 614 020 1239 | SOCKET,4P,POWER SUPPLY |
| CN420 | 645 012 5270 | SOCKET,FPC 23P,SYSCON |
| CN421 | 645 012 5249 | SOCKET,FPC 20P,SYSCON |
| CN422 | 645 017 8863 | SOCKET,FPC 20P,MD |
| CN423 | 614 035 4959 | SOCKET,DIP 6P,HEADPHONE |
| or | 614 255 4036 | SOCKET,6P,HEADPHONE |
| CN424 | 645 012 2743 | SOCKET,DIP 9P,HEADPHONE |
| or | 614 249 3847 | SOCKET,9P,HEADPHONE |
| CN430 | 614 123 2379 | TERMINAL |
| or | 614 258 0462 | TERMINAL |
| CN433 | 614 273 8962 | CORD,4P CONNECTOR |
| D4901 | 407 063 9207 | ZENER DIODE MTZJ7.5B |
| D4902 | 407 100 0303 | ZENER DIODE MTZJ36B |
| D4904 | 407 065 1308 | ZENER DIODE MTZJ3.6B |
| D4905 | 407 099 5105 | ZENER DIODE MTZJ4.7B |
| D4913 | 407 099 6805 | ZENER DIODE MTZJ13B |
| D4915 | 407 012 4406 | DIODE 1SS133 |
| D4916 | 407 012 4406 | DIODE 1SS133 |
| D4917 | 407 012 4406 | DIODE 1SS133 |
| HS401 | 614 264 5697 | HEAT SINK |
| HS402 | 614 285 3528 | HEAT SINK |
| IC401 | 409 294 6109 | IC TA2011S |
| IC402 | 409 232 1708 | IC M51167AFP |
| IC403 | 409 189 3404 | IC BA7755A |
| IC404 | 409 051 2801 | IC TC4052BP |
| or | 409 334 7400 | IC NJU4052BD |
| or | 409 336 0508 | IC BU4052BC |
| IC405 | 409 199 4705 | IC MC14066BF |
| or | 409 285 8709 | IC MC14066BD |
| IC406 | 409 344 3607 | IC BH3854AFS |
| IC407 | ⚠ 409 313 0705 | IC TA8223K |
| IC409 | 409 039 7408 | IC NJM4558D |
| IC410 | 409 346 2301 | IC BU2090F |
| IC411 | 409 003 0404 | IC BA6138 |
| IC413 | ⚠ 409 316 3000 | IC BA3938 |
| IC414 | 409 384 3506 | IC BA3314F |
| IC415 | ⚠ 409 145 2809 | IC NJM7805FA |
| L4001 | 645 006 9864 | INDUCTOR,80U |
| or | 614 212 3171 | INDUCTOR,FERITE |
| L4701 | 645 006 9864 | INDUCTOR,80U |
| or | 614 212 3171 | INDUCTOR,FERITE |
| L4801 | 645 006 9864 | INDUCTOR,80U |
| or | 614 212 3171 | INDUCTOR,FERITE |
| L4902 | 645 017 5282 | INDUCTOR,3.3M K |
| LG401 | 614 217 7266 | LUG 1AV2FX9SD09A- |
| PR401 | ⚠ 645 005 9933 | PROTECTOR,IC 0.25A 50V |
| PR402 | ⚠ 645 006 2360 | PROTECTOR,IC 1.0A 50V |
| PR403 | ⚠ 645 014 2475 | PROTECTOR,0.75A 125V |
| Q4601 | ⚠ 405 006 3909 | TR 2SA952-K |
| Q4602 | 405 078 3005 | TR BA1L4M |
| or | 405 000 6104 | TR DTC144ES |
| Q4603 | 405 005 1906 | TR 2SA733-K |
| Q4702 | 405 078 3005 | TR BA1L4M |
| or | 405 000 6104 | TR DTC144ES |
| Q4703 | 405 078 3005 | TR BA1L4M |
| or | 405 000 6104 | TR DTC144ES |
| Q4704 | 405 078 3005 | TR BA1L4M |
| or | 405 000 6104 | TR DTC144ES |
| Q4705 | 405 021 0600 | TR 2SD1012-G-SPA |
| Q4707 | 405 010 9706 | TR 2SC1571-G-NP |
| Q4711 | 405 095 2708 | TR 2SJ40-D |
| or | 405 095 2807 | TR 2SJ40-E |
| Q4712 | 405 095 2708 | TR 2SJ40-D |
| Q4713 | 405 095 2708 | TR 2SJ40-D |
| Q4715 | 405 020 7204 | TR 2SC945A-K |
| Q4717 | 405 020 7204 | TR 2SC945A-K |
| Q4720 | 405 078 3005 | TR BA1L4M |
| or | 405 000 6104 | TR DTC144ES |
| Q4802 | 405 078 3005 | TR BA1L4M |
| or | 405 000 6104 | TR DTC144ES |
| Q4803 | 405 078 3005 | TR BA1L4M |
| or | 405 000 6104 | TR DTC144ES |
| Q4804 | 405 078 3005 | TR BA1L4M |
| or | 405 000 6104 | TR DTC144ES |
| Q4805 | 405 021 0600 | TR 2SD1012-G-SPA |
| Q4807 | 405 010 9706 | TR 2SC1571-G-NP |
| Q4811 | 405 095 2708 | TR 2SJ40-D |
| or | 405 095 2807 | TR 2SJ40-E |
| or | 405 085 9106 | TR 2SJ105-GR |
| or | 405 095 3408 | TR 2SJ105-BL |
| Q4812 | 405 095 2708 | TR 2SJ40-D |
| Q4813 | 405 095 2708 | TR 2SJ40-D |
| Q4815 | 405 020 7204 | TR 2SC945A-K |
| Q4817 | 405 020 7204 | TR 2SC945A-K |
| Q4820 | 405 078 3005 | TR BA1L4M |
| or | 405 000 6104 | TR DTC144ES |
| Q4901 | ⚠ 405 141 3604 | TR KTA1273-Y |
| Q4902 | ⚠ 405 009 5108 | TR 2SB926-T |
| Q4903 | 405 075 8102 | TR DTA143ZS |
| Q4904 | 405 078 3005 | TR BA1L4M |
| or | 405 000 6104 | TR DTC144ES |
| Q4905 | 405 005 1906 | TR 2SA733-K |
| Q4906 | 405 020 7204 | TR 2SC945A-K |
| Q4907 | 405 075 8102 | TR DTA143ZS |
| Q4908 | ⚠ 405 012 7502 | TR 2SC2001-L |
| Q4909 | 405 075 8102 | TR DTA143ZS |

## PARTS LIST

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| Q4911 | 405 078 3005 | TR BA1L4M |
| or | 405 000 6104 | TR DTC144ES |
| Q4912 | 405 013 7204 | TR 2SC2274K-E |
| Q4913 | 405 013 7204 | TR 2SC2274K-E |
| Q4914 | 405 013 7204 | TR 2SC2274K-E |
| Q4917 | ⚠ 405 076 6602 | TR 2SB1185-F |
| Q4918 | ⚠ 405 012 7502 | TR 2SC2001-L |
| Q4919 | 405 078 3005 | TR BA1L4M |
| or | 405 000 6104 | TR DTC144ES |
| Q4925 | 405 005 1906 | TR 2SA733-K |
| Q4928 | 405 078 3005 | TR BA1L4M |
| or | 405 000 6104 | TR DTC144ES |
| Q4929 | 405 005 1906 | TR 2SA733-K |
| Q4930 | 405 020 7204 | TR 2SC945A-K |
| Q4931 | 405 020 7204 | TR 2SC945A-K |
| Q4932 | 405 020 7204 | TR 2SC945A-K |
| R4772 | ⚠ 402 071 1304 | FUSIBLE RES 2.2 JA 1/4W |
| R4789 | 402 072 3406 | RESISTOR 0.1 JA 1/2W |
| R4872 | ⚠ 402 071 1304 | FUSIBLE RES 2.2 JA 1/4W |
| R4889 | 402 072 3406 | RESISTOR 0.1 JA 1/2W |
| R4906 | ⚠ 402 079 4307 | RESISTOR 47 J- 1W |
| R4908 | ⚠ 402 079 8404 | RESISTOR 68 JA 1/2W |
| RS401 | 614 256 0686 | RESISTOR |
| SA401 | 411 021 4005 | SCR S-TPG BIN 3X12 |
| SA402 | 411 021 4005 | SCR S-TPG BIN 3X12 |
| SA403 | 411 021 4005 | SCR S-TPG BIN 3X12 |
| SA404 | 411 023 9800 | SCR S-TPG PAN 3X8 |
| SA405 | 411 023 9800 | SCR S-TPG PAN 3X8 |
| SA406 | 411 023 9800 | SCR S-TPG PAN 3X8 |
| SA407 | 411 023 9800 | SCR S-TPG PAN 3X8 |
| T4902 | 614 255 3442 | TRANS,OSC |
| VR401 | 645 006 5804 | VR,SEMI,2.2K N |
| VR402 | 645 006 5804 | VR,SEMI,2.2K N |

### HEADPHONE P.W.BOARD ASSY

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 91 | 614 298 2471 | ASSY,PWB,HEADPHONE (N.S.P) |
| CN436 | 645 023 2329 | CORD,SOCKET |
| CN440 | 614 229 3812 | JACK |
| or | 645 013 8621 | JACK,PHONE D3.6 |
| CN441 | 645 005 8110 | PLUG,4P,SPEAKER |
| or | 645 007 0075 | PLUG,4P,SPEAKER |
| CN442 | 614 035 4959 | SOCKET,DIP 6P,AMP |
| or | 614 255 4036 | SOCKET,6P,AMP |
| CN443 | 645 012 2743 | SOCKET,DIP 9P,AMP |
| or | 614 249 3847 | SOCKET,9P,AMP |
| CN444 | 645 005 8110 | PLUG,4P,POWER SUPPLY |
| or | 645 007 0075 | PLUG,4P,POWER SUPPLY |
| CN445 | 645 005 9292 | PLUG,5P,JOG SW |
| or | 645 007 0082 | PLUG,5P,JOG SW |
| L4795 | 645 006 9864 | INDUCTOR,80U |
| or | 614 212 3171 | INDUCTOR,FERITE |
| L4895 | 645 006 9864 | INDUCTOR,80U |
| or | 614 212 3171 | INDUCTOR,FERITE |
| Q4795 | 405 021 0600 | TR 2SD1012-G-SPA |
| Q4895 | 405 021 0600 | TR 2SD1012-G-SPA |

### ANTENNA TERMINAL P.W.BOARD ASSY

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 92 | 614 287 4912 | ASSY,PWB,EXTANT,ANT (N.S.P) |
| CN462 | 645 005 7366 | PLUG,2P,SYSCON |
| or | 645 007 0051 | PLUG,2P,SYSCON |
| CN463 | 645 004 2881 | PLUG,2P,TUNER |
| CN464 | 645 004 2683 | PLUG,2P,AM LOOP ANT |
| or | 645 014 9801 | PLUG,2P,AM LOOP ANT |
| S4620 | 645 006 9673 | SWITCH,PUSH 1P-1T |

### POWER SUPPLY P.W.BOARD ASSY

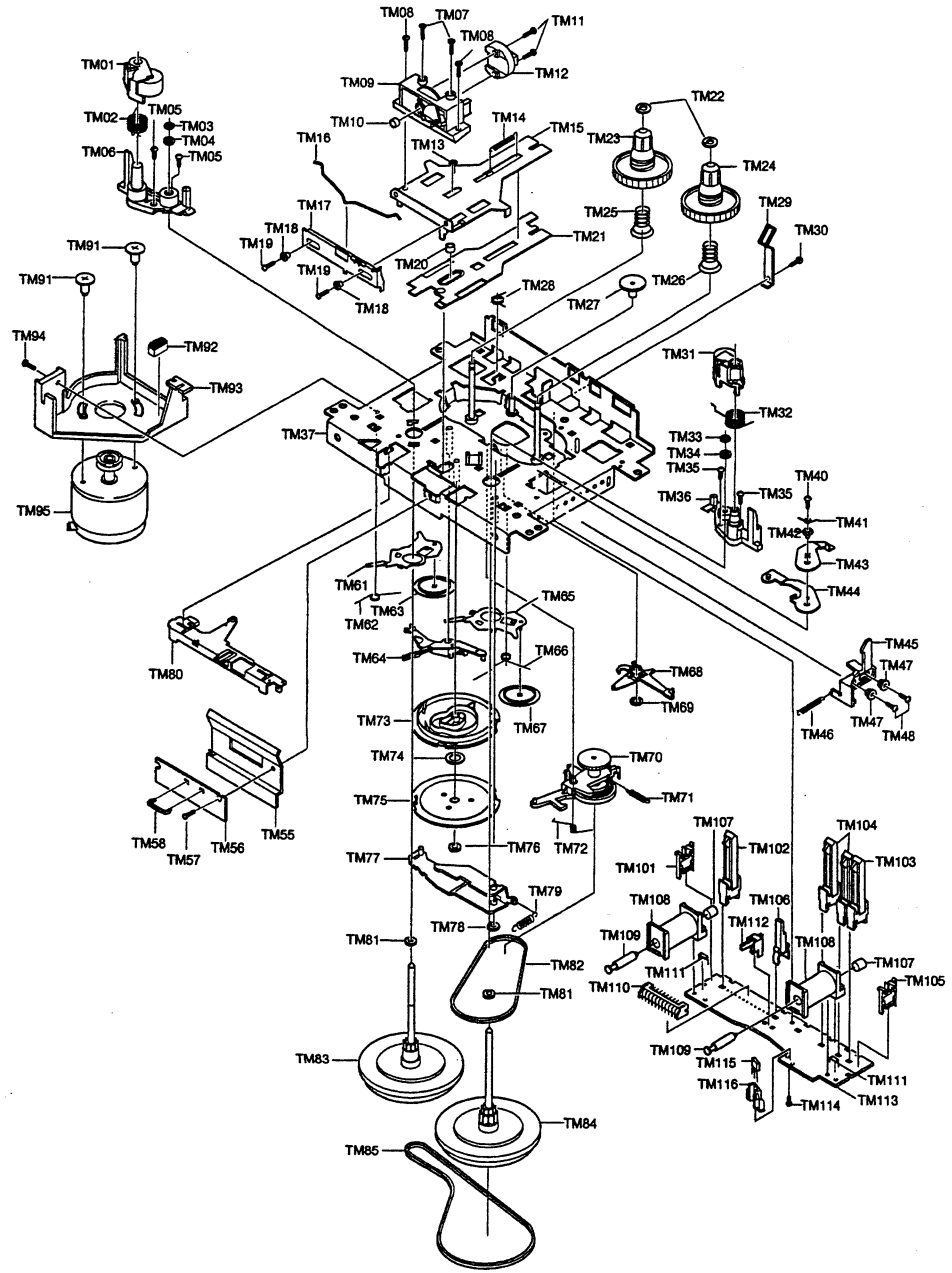
| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 93 | 614 298 2440 | ASSY,PWB,POWER SUPPLY (N.S.P) |
| BR401 | ⚠ 645 006 4760 | HOLDER,FUSE |
| BR402 | ⚠ 645 006 4760 | HOLDER,FUSE |
| BR403 | ⚠ 645 006 4760 | HOLDER,FUSE |
| BR404 | ⚠ 645 006 4760 | HOLDER,FUSE |
| CN435 | 614 299 7604 | CORD,4P CONNECTOR |
| CN453 | 645 004 2706 | PLUG,4P,AMP |
| or | 645 014 9825 | PLUG,4P,AMP |
| CN454 | 614 035 4935 | SOCKET,DIP 4P,HEADPHONE |
| or | 614 237 9776 | SOCKET,4P,HEADPHONE |
| CN455 | 614 017 6964 | TERMINAL BOARD |
| D4991 | ⚠ 407 148 6701 | DIODE 1A3-I |
| D4992 | ⚠ 407 148 6701 | DIODE 1A3-I |
| D4993 | ⚠ 407 148 6701 | DIODE 1A3-I |
| D4994 | ⚠ 407 148 6701 | DIODE 1A3-I |
| D4995 | ⚠ 407 107 6001 | DIODE RL203-BD80 |
| D4996 | ⚠ 407 107 6001 | DIODE RL203-BD80 |
| D4997 | ⚠ 407 107 6001 | DIODE RL203-BD80 |
| D4998 | ⚠ 407 107 6001 | DIODE RL203-BD80 |
| D4999 | ⚠ 407 148 6701 | DIODE 1A3-I |
| L4995 | ⚠ 645 016 8284 | INDUCTOR,180UH |
| R4995 | ⚠ 402 071 1304 | FUSIBLE RES 2.2 JA 1/4W |
| S4991 | 614 226 3631 | SWITCH |

### AC SOCKET P.W.BOARD ASSY

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 94 | 614 298 2457 | ASSY,PWB,AC SOCKET (N.S.P) |
| CN451 | ⚠ 614 020 7590 | SOCKET |
| or | ⚠ 645 005 7038 | SOCKET,INLET AC 2P |



## EXPLODED VIEW (TAPE MECHANISM)



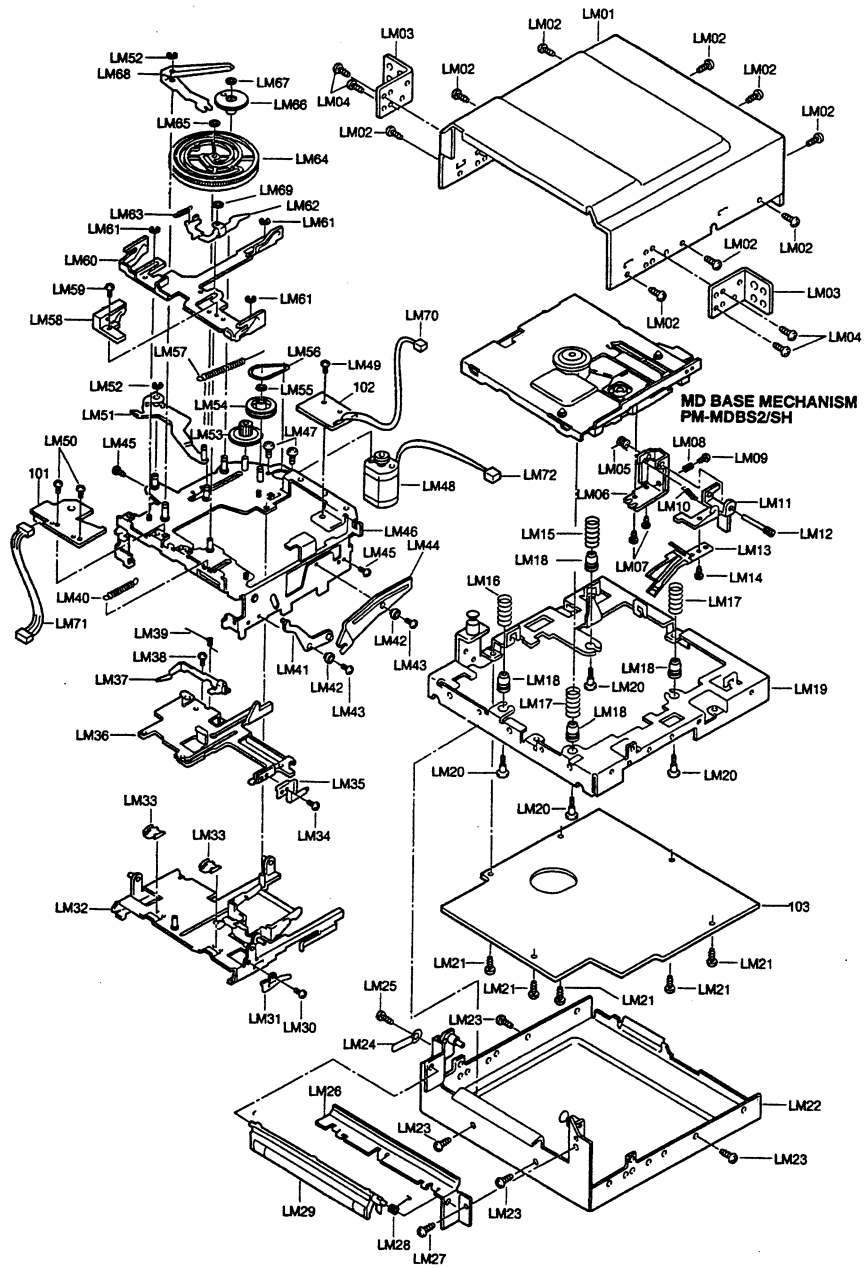
## PARTS LIST

### TAPE MECHANISM (TM-MD3TN-SH . , . N.S.P)

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| TM01 | 645 012 1531 | ASSY,PINCH ROLLER ARM(R) |
| TM02 | 645 012 1401 | P ARM(R)SPRING |
| TM03 | 645 009 7751 | NYLON WASHER 2.05X3.5X0.5 |
| TM04 | 645 009 8031 | HL WASHER 1.7X3.5X0.5 |
| TM05 | 645 012 1906 | C TAPP SCREW M2X5 |
| TM06 | 645 012 1692 | ASSY,FL METAL(R) |
| TM07 | 645 012 1920 | (+)(-)SCREW(SMALL)M2X6 |
| TM08 | 645 012 1890 | TAMS SCREW M2X5 |
| TM09 | 645 012 1494 | ASSY,HEAD BASE |
| TM10 | 645 012 1364 | SPACER |
| TM11 | 645 012 1883 | HEAD COLLAR SCREW(S) |
| TM12 | 645 028 1211 | R/P HEAD |
| TM13 | 645 009 7720 | CAMERA S TAP SCREW G 2X5 |
| TM14 | 645 012 1371 | RC SPRING |
| TM15 | 645 012 1463 | HEAD PANEL(A) |
| TM16 | 645 012 1517 | PINCH ROLLER SPRING |
| TM17 | 645 012 1388 | CHP LEVER |
| TM18 | 645 012 1340 | CHP LEVER COLLAR |
| TM19 | 645 009 7027 | CAMERA TS M SCREW 1.7X3 |
| TM20 | 645 009 8895 | PANEL COLLAR |
| TM21 | 645 012 1500 | ASSY,HEAD PANEL(B) |
| TM22 | 645 009 7072 | HL WASHER CUT 1.4X3.1X0.5 |
| TM23 | 645 012 1623 | ASSY,T REEL(R) |
| TM24 | 645 012 1616 | ASSY,T REEL(F) |
| TM25 | 645 012 1593 | BT SPRING |
| TM26 | 645 012 1609 | BT SPRING(F) |
| TM27 | 645 012 1555 | FF GEAR |
| TM28 | 645 012 1470 | HEAD PANEL SPRING |
| TM29 | 645 012 1449 | PACK SPRING |
| TM30 | 645 011 1242 | C TAPP SCREW M2X3 |
| TM31 | 645 012 1524 | ASSY,PINCH ROLLER ARM(F) |
| TM32 | 645 012 1395 | P ARM(F)SPRING |
| TM33 | 645 009 7744 | NYLON WASHER 2.1X3.5X0.5 |
| TM34 | 645 012 1951 | HL WASHER CUT 1.8X4X0.5 |
| TM35 | 645 012 1906 | C TAPP SCREW M2X5 |
| TM36 | 645 012 1685 | ASSY,FL METAL(F) |
| TM37 | 645 012 2514 | ASSY,CHASSIS |
| TM40 | 645 009 7713 | CAMERA S TAP SCREW G 2X6 |
| TM41 | 645 013 8027 | E SLIDE SPRING(F) |
| TM42 | 645 009 8017 | E STOPPER COLLAR |
| TM43 | 645 013 8003 | E STOPPER(A) |
| TM44 | 645 009 7638 | E STOPPER B(F) |
| TM45 | 645 013 8010 | E SLIDE LEVER |
| TM46 | 645 013 8089 | E SLIDE LEVER SPRING |
| TM47 | 645 013 8072 | COLLAR |
| TM48 | 645 012 1913 | S TAMP TAPP SCREW M2X5 |
| TM55 | 645 012 1487 | SHIELD PLATE |
| TM56 | 645 009 6907 | RELAY BOARD |
| TM57 | 645 012 1913 | S TAMP TAPP SCREW M2X5 |
| TM58 | 645 012 1357 | WIRE CLAMP |
| TM61 | 645 012 1647 | ASSY,T GEAR ARM(R) |
| TM62 | 645 012 1586 | TG ARM(R)SPRING |
| TM63 | 645 012 1548 | T GEAR |
| TM64 | 645 012 1777 | M TRIGGER ARM |
| TM65 | 645 012 1630 | ASSY,T GEAR ARM(F) |
| TM66 | 645 012 1579 | TG ARM(F)SPRING |
| TM67 | 645 012 1548 | T GEAR |
| TM68 | 645 012 1562 | RF TRIGGER ARM |
| TM69 | 645 012 1937 | HL WASHER CUT 2.1X5X0.4 |
| TM70 | 645 012 1678 | ASSY,RF CLUTCH |
| TM71 | 645 012 1654 | RF PULLEY ARM SPRING |
| TM72 | 645 012 1814 | TRIGGER ARM SPRING |
| TM73 | 645 012 1760 | M GEAR |
| TM74 | 645 012 1876 | E RING S2.0 |
| TM75 | 645 012 1791 | RF CAM GEAR |
| TM76 | 645 012 1944 | HLW CUT 1.55X3.5X0.5 |
| TM77 | 645 012 1784 | P KICK LEVER |
| TM78 | 645 012 1937 | HL WASHER CUT 2.1X5X0.4 |
| TM79 | 645 012 1432 | PK LEVER SPRING |
| TM80 | 645 012 1753 | CH SLIDE LEVER |
| TM81 | 645 009 7768 | HL WASHER 2.3X3.8X0.13 |
| TM82 | 645 012 1661 | RF BELT |
| TM83 | 645 012 1715 | ASSY,FLYWHEEL(R) |
| TM84 | 645 012 1708 | ASSY,FLYWHEEL(F) |
| TM85 | 645 009 6990 | MAIN BELT |
| TM91 | 645 011 3727 | MOTOR COLLER SCREW |
| TM92 | 645 012 1333 | MAT |
| TM93 | 645 012 1722 | MOTOR BRACKET |
| TM94 | 645 012 1906 | C TAPP SCREW M2X5 |
| TM95 | 645 028 1198 | ASSY,MOTOR |
| TM101 | 645 012 1845 | P BASE STUD |
| TM102 | 645 011 1631 | LEAF SW MTS-10431MVJ0 |
| TM103 | 645 011 1631 | LEAF SW MTS-10431MVJ0 |
| TM104 | 645 011 1631 | LEAF SW MTS-10431MVJ0 |
| TM105 | 645 012 1845 | P BASE STUD |
| TM106 | 645 012 1869 | LEAF SW MCV-00511MVD0 |
| TM107 | 645 012 1425 | PLUNGER HOLDER |
| TM108 | 645 012 1807 | SOLENOID |
| TM109 | 645 012 1418 | PLUNGER |
| TM110 | 645 013 6252 | CONNECTOR S11B-PH-K-S |
| TM111 | 645 013 6269 | DIODE,DSF10C |
| TM112 | 645 012 1852 | LEAF SW MSW-18211MVD0 |
| TM113 | 645 012 1821 | P BASE |
| TM114 | 645 009 2312 | C TAP SCREW M2X4 |
| TM115 | 645 013 6276 | HALL IC LB9051A |
| TM116 | 645 012 1838 | IC PROTECTOR |



## EXPLODED VIEW (MD LOADING MECHANISM)



## PARTS LIST

### MD MECHANISM (MDBL3100/SH) ... N.S.P

### MD LOADING MECHANISM SECTION (MDSL3/SH ... N.S.P)

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| LM01 | 614 287 1577 | SHIELD,TOP,UPPER |
| LM02 | 411 028 1908 | SCR S-TPG PAN 1.7X3,UPPER SHIELD |
| LM03 | 614 277 5493 | JOINT,MD UNIT FIXING |
| LM04 | 411 028 2905 | SCR S-TPG PAN 2X4,JOINT FIXING |
| LM05 | 614 277 6315 | SPRING,HEAD PUSH DOWN |
| LM06 | 614 287 1539 | MOUNTING,HEAD,PICK CONT.ANGLE |
| LM07 | 411 019 9906 | SCR PAN PCS 1.7X3, PICK CONT ANGLE |
| LM08 | 614 278 9902 | SPRING,HEAD DOWN ADJUST |
| LM09 | 411 169 6909 | SCR PAN PCS 1.4X4,HEAD ADJUST |
| LM10 | 614 277 9118 | SPRING,HEAD SIDE PULL |
| LM11 | 614 277 5578 | LEVER,HEAD FIX |
| LM12 | 614 285 4679 | SHAFT,HEAD U/D LEVER CENTER |
| LM13 | 645 016 1209 | HEAD,MD,REC |
| LM14 | 411 019 9401 | SCR PAN PCS 1.7X2.5,HEAD |
| LM15 | 614 277 8302 | SPRING,FLOATING C |
| LM16 | 614 277 6254 | SPRING,FLOATING B |
| LM17 | 614 294 8798 | SPRING,COMP,FLOATING A |
| LM18 | 614 277 5288 | DAMPER,FLOATING CUSHION |
| LM19 | 614 288 6397 | ASSY,CHASSIS FLOATING |
| LM20 | 614 277 5929 | SPECIAL SCREW-1.2X5.1,FLOATING |
| LM21 | 411 170 5304 | SCR S-TPG PAN+OTW 2X6,MD PWB |
| LM22 | 614 288 6403 | ASSY,SHIELD BOTTOM |
| LM23 | 411 028 2905 | SCR S-TPG PAN 2X4, FLOATING CHASSIS |
| LM24 | 614 129 9341 | LUG,SW CORD FIXING |
| LM25 | 411 019 9906 | SCR PAN PCS 1.7X3,LUG FIXING |
| LM26 | 614 277 5615 | MOUNTING,DOOR BRACKET |
| LM27 | 411 019 9906 | SCR PAN PCS 1.7X3,DOOR BRACKET |
| LM28 | 614 277 6308 | SPRING,DOOR CLOSE |
| LM29 | 614 277 5295 | DOOR,APPERANCE DOOR |
| LM30 | 411 169 6800 | SCR PAN PCS 1.7X1.5,SPRING |
| LM31 | 614 277 5813 | SPRING,SHUTTER OPENNER |
| LM32 | 614 278 6444 | COMPL,HOLDER,PACK HOLDER ASSY |
| LM33 | 614 277 5806 | SPRING,PACK PRESS FRONT |
| LM34 | 411 169 6800 | SCR PAN PCS 1.7X1.5,SPRING |
| LM35 | 614 277 5820 | SPRING,PACK HANDLING |
| LM36 | 614 278 6536 | ASSY,SLIDE,LOADING |
| LM37 | 614 277 5790 | SPRING,PACKOPRESS BACK |
| LM38 | 411 169 6800 | SCR PAN PCS 1.7X1.5,SPRING |
| LM39 | 614 277 6292 | SPRING,LOCK LEVER PUSH |
| LM40 | 614 277 6285 | SPRING,HEAD U/D LEVER PULL |
| LM41 | 614 278 6475 | ASSY,LEVER,DOOR O/C LEVER B |
| LM42 | 614 277 5967 | PIPE,DOOR O/C LEVER CENTER |
| LM43 | 411 019 9906 | SCR PAN PCS 1.7X3,PIPE |
| LM44 | 614 277 5547 | LEVER,DOOR O/C LEVER A |
| LM45 | 411 028 1908 | SCR S-TPG PAN 1.7X3,BASE MECHA |
| LM46 | 614 278 6413 | ASSY,CHASSIS,LOADING |
| LM47 | 411 038 8904 | SCR PAN 2X2,MOTOR FIXING |
| LM48 | 645 016 1506 | ASSY,MOTOR LOADING |
| LM49 | 411 019 9401 | SCR PAN PCS 1.7X2.5,HEAD PWB |
| LM50 | 411 019 9401 | SCR PAN PCS 1.7X2.5,SW PWB |
| LM51 | 614 278 6468 | ASSY,LEVER,LOADING |
| LM52 | 411 015 7609 | RING E 1.5,LEVER |
| LM53 | 614 277 5394 | GEAR,RELAY GEAR B |
| LM54 | 614 277 5707 | PULLEY GEAR |
| LM55 | 412 034 4709 | SPECIAL WASHER,GEAR |
| LM56 | 614 277 5219 | BELT,MAIN BELT |
| LM57 | 614 277 6261 | SPRING,LOAD IN/OUT |
| LM58 | 614 277 5271 | CAM,HEAD U/D CAM |
| LM59 | 411 019 9906 | SCR PAN PCS 1.7X3,CAM |
| LM60 | 614 294 6404 | ASSY,SLIDE,UP/DOWN |
| LM61 | 411 015 7609 | RING E 1.5,UP-DOWN SLIDE |
| LM62 | 614 277 5509 | LEVER,SW LEVER |
| LM63 | 614 277 6278 | SPRING,SW LEVER PULL |
| LM64 | 614 277 5370 | GEAR,CAM GEAR |
| LM65 | 412 034 4709 | SPECIAL WASHER,GEAR |
| LM66 | 614 277 5387 | GEAR,RELAY GEAR A |
| LM67 | 412 034 4709 | SPECIAL WASHER,GEAR |
| LM68 | 614 278 6451 | ASSY,LEVER,U/D DRIVE |
| LM69 | 411 015 6800 | RING E 1.2,SW LEVER FIXING |
| LM70 | 614 284 3482 | CORD,2P CONNECTOR,MD HEAD |
| LM71 | 614 284 3505 | CORD,4P CONNECTOR,MECHA SW |
| LM72 | 614 284 3499 | CORD,2P CONNECTOR,MOTOR |
| | 645 023 5047 | FLEXIBLE FLAT CABLE,20P, SYSCON-MD |
| | 645 029 5850 | FLEXIBLE FLAT CABLE,21P, PICKUP TO MD.PWB |

### MD LOADING MECHANISM SWITCH P.W.BOARD ASSY

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 101 | 614 278 5966 | ASSY,PWB,MODE SW (N.S.P) |
| CN555 | 645 018 2075 | PLUG,4P,SW PWB LEAD OUT |
| S5501 | 645 018 8596 | SWITCH,PUSH 1P-1TX1,EJWCT |
| S5502 | 645 018 8596 | SWITCH,PUSH 1P-1TX1,HDCADY |
| S5503 | 645 018 8596 | SWITCH,PUSH 1P-1TX1,LOADING |

### MD HEAD RELAY P.W.BOARD ASSY

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 102 | 614 278 5973 | ASSY,PWB,MD HEAD RELAY (N.S.P) |
| CN553 | 645 011 9644 | SOCKET,FPC 6P,HEAD RELAY |

### MD P.W.BOARD ASSY

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 103 | 614 295 3518 | ASSY,PWB,MD (N.S.P) |
| B5801 | 645 019 1039 | INDUCTOR,1000 OHM |
| B5803 | 645 019 1039 | INDUCTOR,1000 OHM |
| B5811 | 645 019 1039 | INDUCTOR,1000 OHM |
| B5812 | 645 019 1039 | INDUCTOR,1000 OHM |
| B5813 | 645 019 1039 | INDUCTOR,1000 OHM |
| B5814 | 645 019 1039 | INDUCTOR,1000 OHM |
| C5101 | 403 275 7406 | TA-SOLID 4.7U M 6.3V |
| C5102 | 403 286 1707 | TA-SOLID 10U M 6.3V |
| C5103 | 403 286 1707 | TA-SOLID 10U M 6.3V |
| C5104 | 403 275 7406 | TA-SOLID 4.7U M 6.3V |
| C5118 | 403 275 7406 | TA-SOLID 4.7U M 6.3V |
| C5120 | 403 286 1707 | TA-SOLID 10U M 6.3V |
| C5311 | 403 154 2508 | OS-SOLID 15U M 6.3V |
| C5358 | 403 154 2508 | OS-SOLID 15U M 6.3V |
| C5813 | 403 091 0407 | TA-SOLID 1U M 16V |
| C5814 | 403 091 0407 | TA-SOLID 1U M 16V |
| C5902 | 403 275 7406 | TA-SOLID 4.7U M 6.3V |
| C5903 | 403 311 1603 | TA-SOLID 22U M 4V |
| C5905 | 403 311 1603 | TA-SOLID 22U M 4V |
| C5915 | 403 296 8109 | TA-SOLID 10U M 10V |
| CN501 | 645 026 5358 | SOCKET,FPC 21P |
| CN502 | 645 023 3760 | SOCKET,FPC 8P |
| CN503 | 645 005 7366 | PLUG,2P |
| or | 614 017 2539 | PLUG 1AV4J10AU020N |
| CN504 | 645 005 6901 | PLUG,SIDE-ZR-SM3 2P |
| CN505 | 645 005 6925 | PLUG,SIDE-ZR-SM3 4P |
| CN571 | 645 022 0364 | SOCKET,FPC 20P |
| D5101 | 407 149 0807 | DIODE 1SS355 |
| D5102 | 407 149 0807 | DIODE 1SS355 |
| D5351 | 407 010 0707 | DIODE SB05-05CP |
| D5352 | 407 010 0707 | DIODE SB05-05CP |
| D5501 | 407 149 0807 | DIODE 1SS355 |
| IC511 | 409 411 8702 | IC CXA2523AR |
| IC521 | 409 411 6609 | IC CXD2652AR |
| IC522 | 409 301 5507 | IC TC7S08FU |
| IC523 | 410 295 4001 | IC KM44V1000DT-L6-Z |
| or | 410 295 4100 | IC KM44V1000DJ-L6-Z |





| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| or | 410 288 9907 | IC HM51W4400BLTT-7 |
| or | 410 288 9808 | IC HM51W4400BTT-7 |
| or | 410 264 5909 | IC HM51W4400BSL-7-EL |
| IC531 | 409 411 6401 | IC BH6511FS |
| IC532 | 409 371 4301 | IC TC74ACT00FS |
| IC533 | 409 370 4807 | IC BA6289F |
| IC551 | 410 308 7807 | IC M30600M8-112FP |
| IC552 | 409 367 0300 | IC RN5VL27AA |
| IC553 | 409 424 1202 | IC BR24C02F |
| IC561 | 409 410 1001 | IC UPC2933T |
| IC568 | 409 371 4301 | IC TC74ACT00FS |
| IC569 | 410 298 7900 | IC TC74HC4050AFT-EL |
| IC591 | 409 411 5008 | IC AK4512-VF |
| L5202 | 645 004 1983 | INDUCTOR,2.7U J |
| L5204 | 645 025 6455 | FILTER,EMI 270PF |
| L5205 | 645 027 4916 | FILTER,EMI 470PF |
| L5301 | 645 001 4512 | INDUCTOR,10U K |
| L5302 | 645 001 4512 | INDUCTOR,10U K |
| L5303 | 645 001 4512 | INDUCTOR,10U K |
| L5305 | 645 001 5427 | INDUCTOR,2.2U M |
| L5306 | 645 001 4512 | INDUCTOR,10U K |
| L5307 | 645 001 4512 | INDUCTOR,10U K |
| L5351 | 645 001 5427 | INDUCTOR,2.2U M |
| Q5101 | 405 105 8201 | TR 2SB1132-Q |
| or | 405 008 6403 | TR 2SB798-DL |
| Q5102 | 405 000 1109 | TR DTA124EK |
| Q5103 | 405 134 5905 | TR 2SA1037AK-R |
| Q5104 | 405 134 5905 | TR 2SA1037AK-R |
| Q5106 | 405 000 4100 | TR DTC124EK |
| Q5351 | 405 125 2005 | TR 2SJ284 |
| Q5352 | 405 110 4106 | TR 2SK1848 |
| Q5353 | 405 110 4106 | TR 2SK1848 |
| Q5354 | 405 125 2005 | TR 2SJ284 |
| R5101 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R5102 | 401 037 5004 | MT-GLAZE 0.000 ZA 1/10W |
| R5104 | 401 037 5004 | MT-GLAZE 0.000 ZA 1/10W |
| R5105 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R5106 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R5107 | 401 037 8005 | MT-GLAZE 15K JA 1/10W |
| R5108 | 401 038 0701 | MT-GLAZE 2.2K JA 1/10W |
| R5109 | 401 038 6604 | MT-GLAZE 470K JA 1/10W |
| R5111 | 401 037 1105 | MT-GLAZE 6.8 JA 1/8W |
| R5113 | 401 037 5707 | MT-GLAZE 100K JA 1/10W |
| R5114 | 401 037 5202 | MT-GLAZE 100 JA 1/10W |
| R5115 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R5116 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R5117 | 401 038 6406 | MT-GLAZE 4.7K JA 1/10W |
| R5118 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R5119 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R5120 | 401 037 5707 | MT-GLAZE 100K JA 1/10W |
| R5121 | 401 038 3603 | MT-GLAZE 3.3K JA 1/10W |
| R5122 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R5123 | 401 038 3603 | MT-GLAZE 3.3K JA 1/10W |
| R5124 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R5125 | 401 037 5707 | MT-GLAZE 100K JA 1/10W |
| R5126 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R5129 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R5201 | 401 037 5202 | MT-GLAZE 100 JA 1/10W |
| R5202 | 401 038 3504 | MT-GLAZE 330 JA 1/10W |
| R5203 | 401 037 5202 | MT-GLAZE 100 JA 1/10W |
| R5204 | 401 038 9001 | MT-GLAZE 680 JA 1/10W |
| R5207 | 401 037 7800 | MT-GLAZE 150 JA 1/10W |
| R5208 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R5209 | 401 038 3603 | MT-GLAZE 3.3K JA 1/10W |
| R5210 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R5211 | 401 038 9407 | MT-GLAZE 680K JA 1/10W |
| R5212 | 401 037 5707 | MT-GLAZE 100K JA 1/10W |
| R5213 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R5214 | 401 038 3504 | MT-GLAZE 330 JA 1/10W |
| R5216 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R5218 | 401 038 0701 | MT-GLAZE 2.2K JA 1/10W |
| R5219 | 401 038 0701 | MT-GLAZE 2.2K JA 1/10W |
| R5221 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R5222 | 401 037 5004 | MT-GLAZE 0.000 ZA 1/10W |
| R5223 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R5224 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R5225 | 401 037 5806 | MT-GLAZE 1M JA 1/10W |
| R5230 | 401 037 5004 | MT-GLAZE 0.000 ZA 1/10W |
| R5301 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R5354 | 401 038 1807 | MT-GLAZE 27 JA 1/10W |
| R5355 | 401 035 7505 | MT-GLAZE 15 JA 1/8W |
| R5356 | 401 035 6409 | MT-GLAZE 12 JA 1/8W |
| R5357 | 401 037 5202 | MT-GLAZE 100 JA 1/10W |
| R5358 | 401 038 1807 | MT-GLAZE 27 JA 1/10W |
| R5359 | 401 035 6409 | MT-GLAZE 12 JA 1/8W |
| R5361 | 401 035 7505 | MT-GLAZE 15 JA 1/8W |
| R5362 | 401 035 6409 | MT-GLAZE 12 JA 1/8W |
| R5363 | 401 037 5202 | MT-GLAZE 100 JA 1/10W |
| R5364 | 401 035 6409 | MT-GLAZE 12 JA 1/8W |
| R5365 | 401 035 7505 | MT-GLAZE 15 JA 1/8W |
| R5366 | 401 035 7505 | MT-GLAZE 15 JA 1/8W |
| R5370 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R5371 | 401 037 9309 | MT-GLAZE 18K JA 1/10W |
| R5372 | 401 038 0800 | MT-GLAZE 22K JA 1/10W |
| R5373 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R5502 | 401 037 5707 | MT-GLAZE 100K JA 1/10W |
| R5506 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R5507 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R5508 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R5514 | 401 037 5004 | MT-GLAZE 0.000 ZA 1/10W |
| R5516 | 401 037 5004 | MT-GLAZE 0.000 ZA 1/10W |
| R5517 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R5518 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R5519 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R5520 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R5521 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R5522 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R5523 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R5533 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R5534 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R5535 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R5537 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R5701 | 401 037 5202 | MT-GLAZE 100 JA 1/10W |
| R5702 | 401 037 5202 | MT-GLAZE 100 JA 1/10W |
| R5703 | 401 037 5202 | MT-GLAZE 100 JA 1/10W |
| R5704 | 401 037 5202 | MT-GLAZE 100 JA 1/10W |
| R5705 | 401 037 5202 | MT-GLAZE 100 JA 1/10W |
| R5706 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R5707 | 401 035 4108 | MT-GLAZE 0.000 ZA 1/8W |
| R5709 | 401 038 6505 | MT-GLAZE 47K JA 1/10W |
| R5803 | 401 037 8005 | MT-GLAZE 15K JA 1/10W |
| R5804 | 401 037 8005 | MT-GLAZE 15K JA 1/10W |
| R5805 | 401 038 0800 | MT-GLAZE 22K JA 1/10W |
| R5806 | 401 038 0800 | MT-GLAZE 22K JA 1/10W |
| R5812 | 401 037 5707 | MT-GLAZE 100K JA 1/10W |
| R5813 | 401 037 5707 | MT-GLAZE 100K JA 1/10W |
| R5830 | 401 037 5004 | MT-GLAZE 0.000 ZA 1/10W |
| R5901 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| R5902 | 401 037 5202 | MT-GLAZE 100 JA 1/10W |
| R5903 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R5904 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R5905 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R5906 | 401 037 5400 | MT-GLAZE 1K JA 1/10W |
| R5907 | 401 037 5608 | MT-GLAZE 10K JA 1/10W |
| X5201 | 645 023 2305 | OSC,CRYSTAL 45.1584MHZ |
| X5501 | 645 026 5303 | OSC,CERAMIC 6.0MHZ |

## PARTS LIST

### MD BASE MECHANISM SECTION (PM-MDBS2/SH . . . N.S.P)

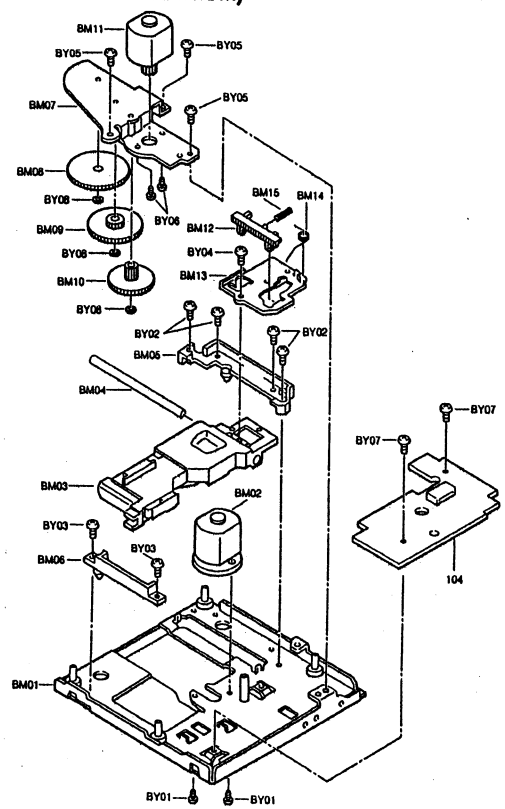
| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| BM01 | 614 296 4767 | ASSY,CHASSIS,BASE MECHA |
| BM02 | 645 022 9060 | ASSY,MOTOR SPINDLE |
| BM03 | 645 026 6782 | PICKUP,LASER KMS-260A,MD |
| BM04 | 614 287 3007 | SHAFT,PICKUP RAIL |
| BM05 | 614 287 1553 | MOUNTING,PICKUP RAIL |
| BM06 | 614 294 6411 | MOUNTING,PICKUP GUIDE/POSTPIN |
| BM07 | 614 287 2772 | ASSY,MOUNTING, SLEAD MOTOR/GEAR |
| BM08 | 614 287 1447 | GEAR,1ST RELAY |
| BM09 | 614 287 1454 | GEAR,2ND RELAY |
| BM10 | 614 287 1461 | GEAR,RACK DRIVE |
| BM11 | 645 022 9077 | ASSY,MOTOR SLEAD |
| BM12 | 614 287 1508 | LEVER,RACK GEAR |
| BM13 | 614 287 1522 | MOUNTING,RACK LEVER |
| BM14 | 614 287 9290 | SPRING,WIRE, RACK/PICKUP GAP CANCEL |
| BM15 | 614 287 9283 | SPRING,COMP, PUSHING RACK LEVER |
| | 645 023 3791 | FLEXIBLE FLAT CABLE,8P, BASE MECHA SWITCH PWB |

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| BY01 | 411 169 6800 | SCR PAN PCS 1.7X1.5, SPINDLE MOTOR |
| BY02 | 411 019 9906 | SCR PAN PCS 1.7X3,RAIL MOUNTING |
| BY03 | 411 019 9906 | SCR PAN PCS 1.7X3, MOUNTING POSTPIN |
| BY04 | 411 019 9401 | SCR PAN PCS 1.7X2.5, MOUNTING RACK |
| BY05 | 411 028 1908 | SCR S-TPG PAN 1.7X3, MOUNTING SLED |
| BY06 | 411 169 6800 | SCR PAN PCS 1.7X1.5,SLEAD MOTOR |
| BY07 | 411 019 9906 | SCR PAN PCS 1.7X3,PWB |
| BY08 | 412 051 2702 | SPECIAL WASHER,GEARS |

### MD BASE MECHANISM SWITCH P.W.BOARD ASSY

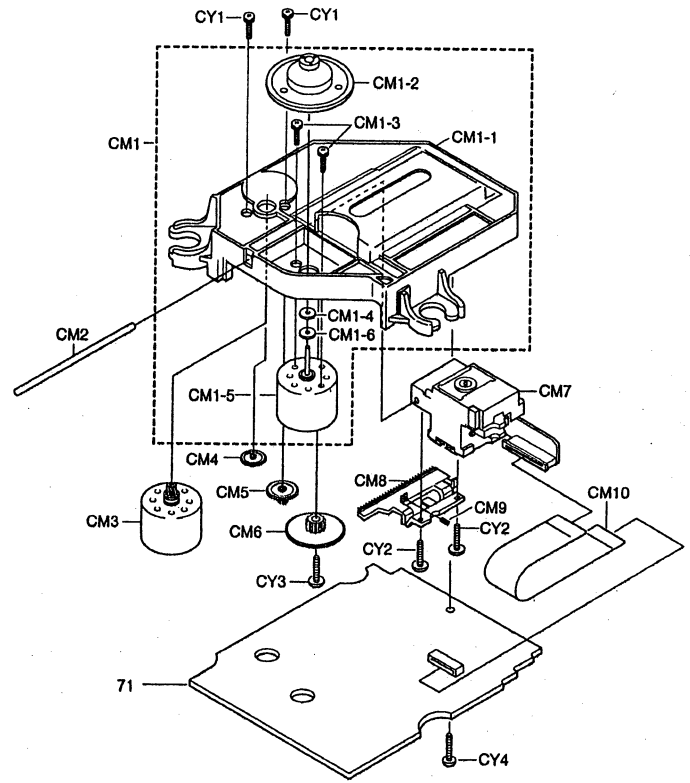
| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 104 | 614 287 4066 | ASSY,PWB,MD MECHA, LIMIT/PACK SW (N.S.P) |
| CN552 | 645 023 3760 | SOCKET,FPC 8P |
| S5101 | 645 023 0868 | SWITCH,PUSH 1P-1TX1,PROTECT |
| S5102 | 645 023 0851 | SWITCH,PUSH 1P-1TX1,REFLECT |
| S5103 | 645 023 0844 | SWITCH,PUSH 1P-1TX1,PICK UP LIMIT |

## EXPLODED VIEW (MD BASE MECHANISM)






## EXPLODED VIEW (CD MECHANISM)




## PARTS LIST

### CD MECHANISM (CD94C15-SH . . . N.S.P)

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| CM1 | 614 279 1912 | ASSY,CHASSIS,BASE MECHA |
| CM1-1 | 614 262 2575 | CHASSIS,BASE MECHA |
| CM1-2 | 614 263 7739 | ASSY,TURNTABLE,SPINDLE |
| CM1-3 | 411 044 7502 | SCR PAN+SW 2X5,SPINDLE MOTOR |
| CM1-4 | 412 032 0208 | SPECIAL WASHER, ADHESIVE ESCAPE STOP |
| CM1-5 | 645 007 7821 | MOTOR,CD-SPINDLE DC 0.2W |
| CM1-6 | 412 014 5603 | SPECIAL WASHER, TURN TABEL SUPORT |
| CM2 | 614 237 7024 | SHAFT,PICK UP RAIL |
| or | 614 277 8029 | SHAFT,PICK UP RAIL |
| CM3 | 645 007 7814 | ASSY,MOTOR CD-SLED |
| CM4 | 614 237 7093 | GEAR,SLED RETARD GEAR 1 |
| CM5 | 614 237 7109 | GEAR,SLED RETARD GEAR 2 |
| CM6 | 614 237 7116 | GEAR,SLED GEAR |
| CM7 | 645 006 7983 | PICKUP,LASER SF-P100 |
| or | 645 018 8879 | PICKUP,LASER SF-P100B |
| CM8 | 614 262 2599 | GEAR,RACK,PICK |
| CM9 | 614 238 6934 | SPRING,COMP,PICK RACK GEAR |
| CM10 | 645 007 8873 | FLEXIBLE FLAT CABLE,13P, PICK UP |

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| CY1 | 411 044 8004 | SCR PAN+SW 2X8,SLED MOTOR |
| CY2 | 411 152 4301 | SCR S-TPG PAN PCS 1.7X6, PICK RACK GEAR |
| CY3 | 412 047 3904 | SPECIAL SCREW,SLED GEAR |
| CY4 | 411 022 8408 | SCR S-TPG PAN 2X8,PWB |

## IC BLOCK DIAGRAM

### IC131 CXA1782CQ (Servo Signal Processor)

| No. | Name | I/O | Function |
|---|---|---|---|
| 1 | FEO | O | Focus error amplifier output. Connection internally to the comparator input. |
| 2 | FEI | I | Focus error input. |
| 3 | FDFCT | I | Capacitor connection pin for detect time constant. |
| 4 | FGD | I | Ground this pin through a capacitor when decreasing the focus servo high-frequency gain. |
| 5 | FLB | I | External time constant setting pin for increasing the focus servo low frequency. |
| 6 | FE_O | O | Focus drive output. |
| 7 | FE_M | I | Focus amplifier negative input. |
| 8 | SRCH | I | External time constant setting pin for generating focus servo waveform. |
| 9 | TGU | I | External time constant setting pin for switching track-ing high frequency gain. |
| 10 | TG2 | I | External time constant setting pin for switching track-ing high frequency gain. |
| 11 | FSET | I | High cut off frequency setting pin for focus and tracking phase compensation amplifier. |
| 12 | TA_M | I | Tracking amplifier negative input. |
| 13 | TA_O | O | Tracking drive output. |
| 14 | SP_P | I | Sled amplifier non-inverted input. |
| 15 | SL_M | I | Sled amplifier negative input. |
| 16 | SL_O | O | Sled drive output. |
| 17 | ISET | I | Setting pin for Focus search, Tracking jump and Sled kick current. |
| 18 | VCC | - | +5.0V |
| 19 | CLK | I | Serial data transfer clock input from CPU. |
| 20 | XLT | I | Latch input from CPU. |
| 21 | DATA | I | Serial data input from CPU. |
| 22 | XRST | I | Reset input; resets at Low. |
| 23 | C.OUT | O | Track number count signal output. |
| 24 | SENS | O | Outputs FZC, DFCT, TZC, Gain, BAL, and others according to the command from CPU. |
| 25 | FOK | O | Focus OK comparator output. |

| No. | Name | I/O | Function |
|---|---|---|---|
| 26 | CC2 | O | Input pin for the DEFECT bottom hold output capacitance-coupled. |
| 27 | CC1 | I | DEFECT bottom hold output. |
| 28 | CB | I | Connection pin for DEFECT bottom hold capacitor. |
| 29 | CP | I | Connection pin for MIRR hold capacitor. MIRR comparator non-inverted input. |
| 30 | RF_I | I | Input pin for the RF summing amplifier output capacitance-coupled. |
| 31 | RF_O | O | RF summing amplifier output. Eye pattern check point. |
| 32 | RF_M | I | RF summing amplifier inverted input. The RF amplifier gain is determined by the resistance connected between this pin and RFO pin. |
| 33 | LD | O | APC(Auto Power Controller) amplifier output. |
| 34 | PHD | I | APC(Auto Power Controller) amplifier input. |
| 35 | PHD1 | I | RF I-V amplifier inverted input. Connect these pins to the photo diodes A + C and B + D pins. |
| 36 | PHD2 | I | RF I-V amplifier inverted input. Connect these pins to the photo diodes A + C and B + D pins. |
| 37 | FE_BIAS | I | Bias adjustment of focus error amplifier. |
| 38 | F | I | F I-V and E I-V amplifier inverted input. Connect these pins to the photo diodes F and E. |
| 39 | E | I | F I-V and E I-V amplifier inverted input. Connect these pins to the photo diodes F and E. |
| 40 | EI | - | I-V amplifier E gain adjustment. (When not using automatic balance adjustment.) |
| 41 | VEE | - | Ground |
| 42 | TEO | O | Tracking error amplifier output. E-F signal output. |
| 43 | LPFI | I | Comparator input for balance adjustment. (Input from TEO through LPF.) |
| 44 | TEI | I | Tracking error input. |
| 45 | ATSC | I | Window comparator input for ATSC detection. |
| 46 | TZC | I | Tracking zero-cross comparator input. |
| 47 | TDFCT | I | Capacitor connection pin for defect time constant. |
| 48 | VC | O | (VCC + VEE) / 2 DC voltage output. |



## IC BLOCK DIAGRAM

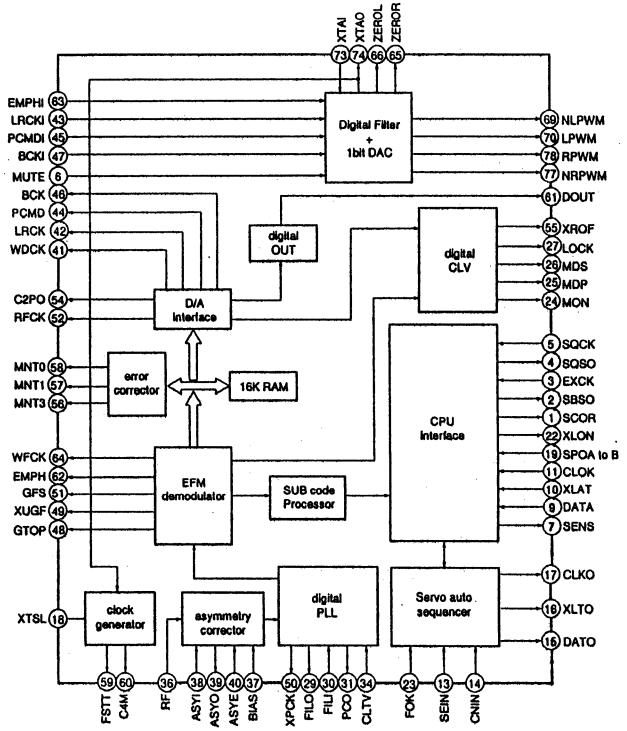
### IC142 CXD2508AQ (Digital Signal Processor)

| No. | Pin Name | I/O | Function |
|---|---|---|---|
| 1 | SCOR | O | Turns [H] when sync SO or SI is detected. |
| 2 | SBSO | O | Serial output of sub-code P - W. |
| 3 | EXCK | I | Clock input for reading SBSO. |
| 4 | SQSO | O | Serial output of SUBQ (80-bit). |
| 5 | SQCK | I | Clock input for reading SQSO. |
| 6 | MUTE | I | [H] at muting, [L] at muting cancel. |
| 7 | SENS | O | SENS signal output to CPU. |
| 8 | XRST | I | System reset, [L] at resetting. |
| 9 | DATA | I | Inputs serial data from CPU. |
| 10 | XLAT | I | Latches input from CPU. Serial data latches at falling edge. |
| 11 | CLOK | I | Inputs serial data transfer clock from CPU. |
| 12 | VSS | - | CND. (0V) |
| 13 | SEIN | I | Inputs SENS signal from SSP. |
| 14 | CNIN | O | Inputs track jump count signal. |
| 15 | DATO | O | Outputs serial data to SSP. |
| 16 | XLTO | O | Outputs latches to SSP. Serial data latches at falling edge. |
| 17 | CLKO | I | Outputs serial data transfer clock to SSP. |
| 18 | SPOA | I | Interface for extension of M. processor (input A). |
| 19 | SPOB | I | Interface for extension of M. processor (input B). |
| 20 | SPOC | I | Interface for extension of M. processor (input C). |
| 21 | XTSL | I | Crystal selection L : 16.9344MHz, H : 33.8688MHz. |
| 22 | XLON | O | Interface for extension of M. processor (output). |
| 23 | FOK | I | Focus OK signal input pin. Used servo auto sequencer with SENS output. |
| 24 | MON | O | ON/OFF control signal for spindle motor. |
| 25 | MDP | O | Servo control signal for spindle motor. |
| 26 | MDS | O | Servo control signal for spindle motor. |
| 27 | LOCK | O | The output of this pin is [H] when the GFS signal sampled at 460 Hz is [H]. It turns [L] when the GFS signal turns out [L] 8 or more times in succession. |
| 28 | TEST | I | Pin for TEST. Normal used stage : GND. |
| 29 | FILO | O | Output of filter for master PLL. (Slave = Digital PLL) |
| 30 | FILI | I | Inputs to filter for master PLL. |
| 31 | PCO | O | Outputs of charge pump for master PLL. |
| 32 | VDD | - | Power supply for digital. (+5V) |
| 33 | AVSS1 | - | Power supply for analog. (0V) |
| 34 | CLTV | I | VCO control voltage input for master PLL. |
| 35 | AVDD1 | - | Power supply for analog. (+5V) |
| 36 | RF | I | EFM signal input. |
| 37 | BIAS | I | Inputs constant current for asymmetry correction circuit. |
| 38 | ASYI | I | Inputs comparator voltage for asymmetry correction circuit. |
| 39 | ASYO | O | EFM fill swing output. ([L] = VSS, [H] = VDD) |
| 40 | ASYE | I | [L] : OFF of asymmetly correction. [H] : ON of asymmetly correction. |

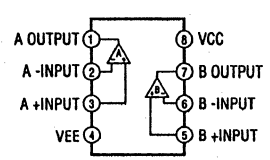
| No. | Pin Name | I/O | Function |
|---|---|---|---|
| 41 | WDCK | O | D/A interface for 48-bit slot. Ward clock (f = 2FS). |
| 42 | LRCK | O | D/A interface for 48-bit slot. LR clock (f = FS). |
| 43 | LRCKI | I | Inputs LR clock to DAC. (48-bit slot) |
| 44 | PCMD | O | D/A interface. Serial data (2'SCOMP, MBS first) |
| 45 | PCMDI | I | Inputs audio data to DAC. (48-bit slot) |
| 46 | BCK | O | D/A interface. Bit clock. |
| 47 | BCKI | I | Inputs bit clock to DAC. (48-bit slot) |
| 48 | GTOP | I | GTOP signal output. |
| 49 | XUGF | O | XUGF signal output. |
| 50 | XPCK | O | XPCK signal output. |
| 51 | GFS | O | GFS signal output. |
| 52 | RFCK | O | RFCK signal output. |
| 53 | VSS | - | GND. (0V) |
| 54 | C2PO | O | C2PO signal output. |
| 55 | XROF | O | XROF signal output. |
| 56 | MNT3 | O | MNT3 signal output. |
| 57 | MNT1 | O | MNT1 signal output. |
| 58 | MNT0 | O | MNT0 signal output. |
| 59 | FSTT | O | 2/3 divided output of pins 73 or 74. |
| 60 | C4M | O | 4.2336 MHz output. |
| 61 | DOUT | O | Digital out OUTPUT pin. |
| 62 | EMPH | O | Stays [H] for playback disc provided with emphasis or [L] for that without emphasis. |
| 63 | EMPHI | I | De-emphasis ON/OFF of DAC. [H] at ON, [L] at OFF. |
| 64 | WFCK | O | WFCK(Write Frame Clock) signal output. |
| 65 | ZEROL | O | Outputs detection for non-sound data. [H] at detection for non-sound data (L-ch). |
| 66 | ZEROR | O | Outputs detection for non-sound data. [H] at detection for non-sound data (R-ch). |
| 67 | DTS1 | I | Test pin for DAC. Normal used state : [L] |
| 68 | VDD | - | Power supply for DAC. |
| 69 | NLPWM | O | Outputs PWM for L-ch. (Negative Phase) |
| 70 | LPWN | O | Outputs PWM for L-ch. (Positive Phase) |
| 71 | AVDD2 | - | Power supply for PWM driver. |
| 72 | AVDD3 | - | Power supply for X'tal. |
| 73 | XTAI | I | Inputs X'tal oscillation circuit (33.8688 MHz). |
| 74 | XTAO | O | Outputs X'tal oscillation circuit (33.8688 MHz). |
| 75 | AVSS3 | - | Power supply for X'tal. (GND) |
| 76 | AVSS2 | - | Power supply for PWM driver.(GND) |
| 77 | NRPWM | O | Outputs PWM for R-ch. (Negative Phase) |
| 78 | RPWM | O | Outputs PWM for R-ch. (Positive Phase) |
| 79 | DST2 | I | Test pin for DAC. Normal used state : [L] |
| 80 | DST3 | I | Test pin for DAC. Normal used state : [L] |

## IC BLOCK DIAGRAM

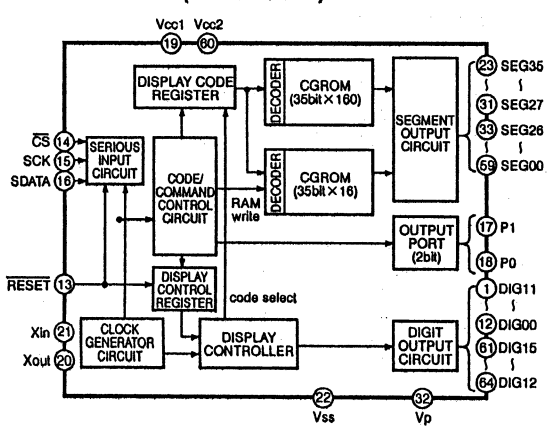
### IC142 CXD2508AQ (Digital Signal Processor)




### IC143 BA15218F (Buffer Amplifier)




### IC152 M66004FP (VFD Controller)






## IC BLOCK DIAGRAM

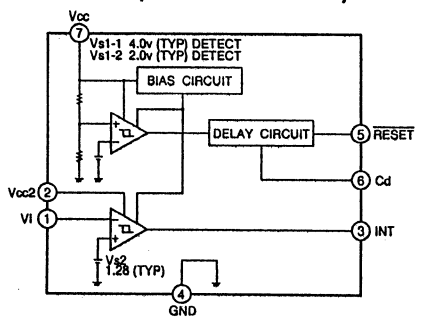
### IC151 M38199MF-079FP (Micro Processor)

| No. | Name | I/O | Description |
|---|---|---|---|
| 1 | LEVEL-L | I | LINE L-ch LEVEL input |
| 2 | LEVEL-R | I | LINE R-ch LEVEL input |
| 3 | AD-PARA0 | I | B PACK SW, AMSS input |
| 4 | ADLADR0 | I | B PLY SW,AMSS input |
| 5 | KEY0 | I | Key input 13 key |
| 6 | KEY1 | I | Key input 12 key |
| 7 | KEY2 | I | Key input 5 key |
| 8 | AD-LADR1 | I | TU SD,OPEN SW,TU STEREO,LIMIT SW input |
| 9 | REEL | I | Reel pulse input |
| 10 | PB2/DA | O | GND. |
| 11 | D-RESET | O | FL CONTROLLER reset output |
| 12 | D-SCK | O | FL CONTROLLER clock output |
| 13 | D-SDATA | O | FL CONTROLLER data output |
| 14 | FOK | I | FOK detection input |
| 15 | JPG1 | I | Jog input |
| 16 | SCOR | I | SCOR detection input |
| 17 | JOG2 | I | Jog input |
| 18 | SUBQ | I | SUBQ input |
| 19 | DSTB | I | MD data strobe input |
| 20 | DSCK | O | Clock output for MD data input |
| 21 | SDATA | O | MD control data input |
| 22 | MDATA | I | MD data input |
| 23 | DATA | O | SONY LSI's, command output of PLL IC |
| 24 | XLAT | O | Command output of SONY LSI's, PLL IC |
| 25 | CLOCK | O | Command output of SONY LSI's, PLL IC |
| 26 | SENS | I | SENS input |
| 27 | P4 | | GND. |
| 28 | ACK | I | MD data confirm output |
| 29 | IR | I | Remote control input |
| 30 | DO | I | PLL IC input |
| 31 | SCOR | I | SCOR detection input |
| 32 | DIST0 | I | Destination set up |
| 33 | DIST1 | I | Destination set up |
| 34 | TEIDEN | I | Service interruption detection |
| 35 | $\overline{\text{RESET}}$ | | System reset terminal |
| 36 | PB1/XCIN | | Sub clock oscillator terminal |
| 37 | PB0/TCOUT | | Sub clock oscillator terminal |
| 38 | XIN | | Main clock oscillation ceramic terminal |
| 39 | XOUT | | Main clock oscillation ceramic terminal |
| 40 | Vss | | Ground potential thermal |
| 41 | SHIFT | O | Micon. clock change |
| 42 | HDCADY | I | MD Disc load detection |
| 43 | P25 | | NC |
| 44 | VOL-CK | O | Volume IC's clock output |
| 45 | VOL-DA | O | Volume IC data signal |
| 46 | VOL-ST | O | Volume IC data signal |
| 47 | EX-DATA | O | Command output of extend IC (M50253P) |
| 48 | EX-CLK | O | Clock output of extend IC (M50253P) |
| 49 | DIG15 | | NC |
| 50 | DIG14 | | NC |

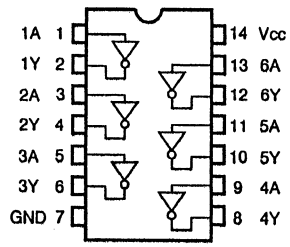
| No. | Name | I/O | Description |
|---|---|---|---|
| 51 | DIG13 | | NC |
| 52 | DIG12 | | NC |
| 53 | DIG11 | | NC |
| 54 | DIG10 | | NC |
| 55 | DIG9 | | FL digit |
| 56 | DIG8 | | FL digit |
| 57 | DIG7 | | FL digit |
| 58 | DIG6 | | FL digit |
| 59 | DIG5 | | FL digit |
| 60 | DIG4 | | FL digit |
| 61 | DIG3 | | FL digit |
| 62 | DIG2 | | FL digit |
| 63 | DIG1 | | FL digit |
| 64 | DIG0 | | FL digit |
| 65 | SEG31 | | FL segment |
| 66 | SEG30 | | FL segment |
| 67 | SEG29 | | FL segment |
| 68 | SEG28 | | FL segment |
| 69 | SEG27 | | FL segment |
| 70 | SEG26 | | FL segment |
| 71 | SEG25 | | FL segment |
| 72 | SEG24 | | FL segment |
| 73 | SEG23 | | FL segment |
| 74 | SEG22 | | FL segment |
| 75 | SEG21 | | FL segment |
| 76 | SEG20 | | FL segment |
| 77 | SEG19 | | FL segment |
| 78 | SEG18 | | FL segment |
| 79 | SEG17 | | FL segment |
| 80 | SEG16 | | FL segment |
| 81 | SEG15 | O | PLAY PLUNGER output (ON="H") |
| 82 | SEG14 | O | FF/REW PLUNGER output (ON="H") |
| 83 | SEG13 | O | Power control (ON="H") |
| 84 | SEG12 | O | Analogue audio mute output (ON="H") |
| 85 | SEG11 | O | Mute control signal for Driver IC (ON="L") |
| 86 | SEG10 | O | Power control signal for DSP (ON="H") |
| 87 | SEG9 | O | CD voice muting (ON="H") |
| 88 | SEG8 | O | HI speed dubbing LED (ON="L") |
| 89 | SEG7 | O | Tuner power signal (ON="L") |
| 90 | SEG6 | O | Tuner mute signal (ON="L") |
| 91 | Vcc | | +B TERMINAL |
| 92 | SEG5 | O | Normal speed dubbing LED (ON="L") |
| 93 | SEG4 | O | MD dubbing LED (ON="L") |
| 94 | SEG3 | O | FL controller chip select output (Select="I") |
| 95 | SEG2 | O | MD power control (ON="H") |
| 96 | SEG1 | O | Syncro dubbing LED (ON="L") |
| 97 | SEG0 | | NC |
| 98 | VEE | | FL drive power |
| 99 | AVss | | A/D ground potential terminal |
| 100 | VREF | | A/D standard potential terminal |

## IC BLOCK DIAGRAM

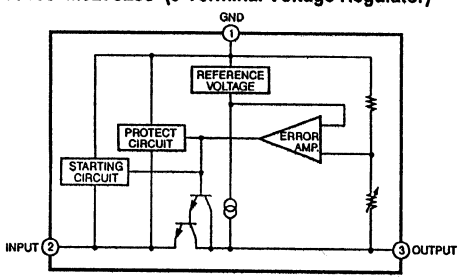
### IC153 M62009FP (Malfunction Protection)



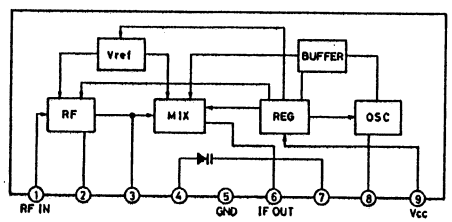

### IC154 TC74VHC04F (Hex Inverter)



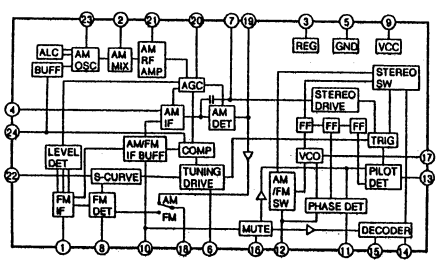

### IC155 M5278L56 (3-Terminal Voltage Regulator)



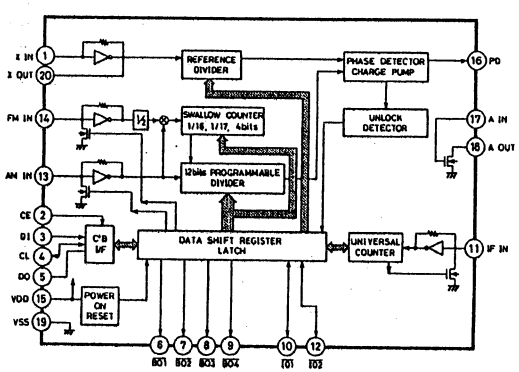

### IC201 LA1186N (FM Front End)




### IC211 LA1832ML (Tuner System)




### IC221 LC7213MD (PLL Frequency Synthesizer)

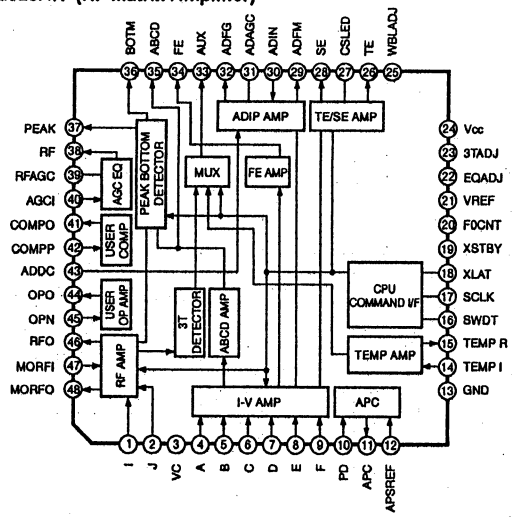



* NOTE : IC block diagrams of Amplifier section are mentioned in Block diagram (Amplifier, Page 80).

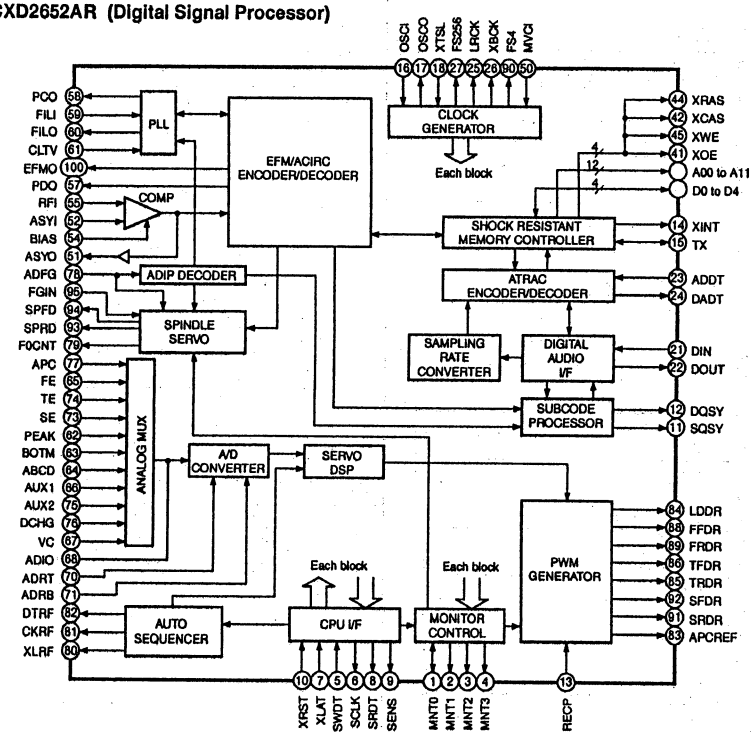


## IC BLOCK DIAGRAM

### IC511 CXA2523AR (RF Matrix Amplifier)




### IC521 CXD2652AR (Digital Signal Processor)



## IC BLOCK DIAGRAM

### IC521 CXD2652AR (Digital Signal Processor)

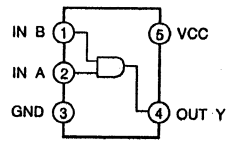
| No. | Name | I/O | Description |
|---|---|---|---|
| 1 | MNT0 | I/O | Monitor output |
| 2 | MNT1 | O | Monitor output |
| 3 | MNT2 | O | Monitor output |
| 4 | MNT3 | O | Monitor output |
| 5 | SWDT | I | Data input for microcomputer serial interface |
| 6 | SCLK | I | Shift clock input for microcomputer serial interface |
| 7 | X_AT | I | Latch input for microcomputer serial interface. Latched at the falling edge |
| 8 | SRDT | O | Data output for microcomputer serial interface |
| 9 | SENS | O | Outputs the internal status corresponding to the microcomputer serial interface address |
| 10 | XRST | I | Reset input, Low: reset |
| 11 | SQSY | O | Disc subcode Q sync/ADIP sync output |
| 12 | DQSY | O | Subcode Q sync output in U-bit CD or MD formal when digital source is CD or MD |
| 13 | RECP | I | Laser power switching input. High: recording power Low: playback power |
| 14 | XINT | O | Interruption request output. Low when the interruption status occurs |
| 15 | TX | I | Enable signal input for recording data output High: enabled |
| 16 | OSCI | I | Crystal oscillation circuit input |
| 17 | OSCO | O | Crystal oscillation circuit output (inverted output of the OSCI pin) |
| 18 | XTSL | I | OSCI input frequency switching High: 512Fs(22.5792MHz) Low:1024Fs(45.1584MHz) |
| 19 | NC | - | Not connected |
| 20 | DVss | - | Digital ground |
| 21 | DIN | I | Digital audio interface signal input |
| 22 | DOUT | O | Digital audio interface signal output |
| 23 | ADDT | I | Analog recording input (Connect to the external A/D converter output) |
| 24 | DADT | O | REC monitor output/decoded audio data output |
| 25 | LRCK | O | LRCK (44.1kHz) output to the external audio block |
| 26 | XBCK | O | Bit clock (2.8224MHz) output to the external audio block |
| 27 | FS256 | O | 256Fs output (11.2896MHz) |
| 28 | DVDD | - | Digital power supply |
| 29 | A03 | O | External DRAM address output |
| 30 | A02 | O | External DRAM address output |
| 31 | A01 | O | External DRAM address output |
| 32 | A00 | O | External DRAM address output |
| 33 | A10 | O | External DRAM address output |
| 34 | A04 | O | External DRAM address output |
| 35 | A05 | O | External DRAM address output |
| 36 | A06 | O | External DRAM address output |
| 37 | A07 | O | External DRAM address output |
| 38 | A08 | O | External DRAM address output |
| 39 | A11 | O | External DRAM address output |
| 40 | DVss | - | Digital ground |
| 41 | XOE | O | External DRAM output enable |
| 42 | XCAS | O | External DRAM $\overline{CAS}$ output |
| 43 | A09 | O | External DRAM address output |
| 44 | XRAS | O | External DRAM $\overline{RAS}$ output |
| 45 | XWE | O | External DRAM write enable |
| 46 | D1 | I/O | External DRAM data bus |
| 47 | D0 | I/O | External DRAM data bus |
| 48 | D2 | I/O | External DRAM data bus |
| 49 | D3 | I/O | External DRAM data bus |
| 50 | MVCI | I | External VCO (784Fs) clock input |

| No. | Name | I/O | Description |
|---|---|---|---|
| 51 | ASYO | O | Playback EFM full-swing output (Low: Vss ; High:VDD) |
| 52 | ASYI | I | Playback EFM comparator slice voltage input |
| 53 | AVDD | - | Analog power supply |
| 54 | BIAS | I | Playback EFM comparator bias current input |
| 55 | RFI | I | Playback EFM RF signal input |
| 56 | AVss | - | Analog ground |
| 57 | PDO | O | Phase comparison output for analog PLL of EFM decoder |
| 58 | PCO | O | Phase comparison output for master PLL of playback digital PLL and recording EFM PLL |
| 59 | FILI | I | Filter input for master PLL of playback digital PLL and recording EFM PLL |
| 60 | FILO | O | Filter output for master PLL of playback digital PLL and recording EFM PLL |
| 61 | CLTV | I | Internal VCO control voltage input for master PLL of playback digital PLL and recording EFM PLL |
| 62 | PEAK | I | Peak hold signal input for quantify of light |
| 63 | BOTM | I | Bottom hold signal input for quantify of light |
| 64 | ABCD | I | Signal input for quantify of light |
| 65 | FE | I | Focus error signal input |
| 66 | AUX1 | I | Auxiliary input 1 |
| 67 | VC | I | Center voltage input |
| 68 | ADO | O | Monitor output for A/D converter input signal |
| 69 | AVDD | - | Analog power supply |
| 70 | ADRT | I | Voltage input for the upper limit of the A/D converter operating range |
| 71 | ADRB | I | Voltage input for the lower limit of the A/D converter operating range |
| 72 | AVss | - | Analog ground |
| 73 | SE | I | Sled error signal input |
| 74 | TE | I | Tracking error signal input |
| 75 | AUX2 | I | Auxiliary input 2 |
| 76 | DCHG | I | Connect to the low-impedance power supply |
| 77 | APC | I | Error signal input for laser digital APC |
| 78 | ADFG | I | ADIP binary FM signal (22.05+-1kHz ) input |
| 79 | FOCNT | O | CXA2523 current source setting output |
| 80 | XLRF | O | CXA2523 control latch output. Latched at the falling edge |
| 81 | CKRF | O | CXA2523 control shift clock output |
| 82 | DTRF | O | CXA2523 control data output |
| 83 | APCREF | O | Reference PWM output for laser APC |
| 84 | LDOR | O | PWM output for laser digital APC |
| 85 | TRDR | O | Tracking servo drive PWM output (-) |
| 86 | TFDR | O | Tracking servo drive PWM output (+) |
| 87 | DVDD | - | Digital power supply |
| 88 | FFDR | O | Focus servo drive PWM output (+) |
| 89 | FRDR | O | Focus servo drive PWM output (-) |
| 90 | FS4 | O | 4FS output (176.4kHz) |
| 91 | SRDR | O | Sled servo drive PWM output (-) |
| 92 | SFDR | O | Sled servo drive PWM output (+) |
| 93 | SPRD | O | Spindle servo drive output (PWM (-) or polarity) |
| 94 | SPFD | O | Spindle servo drive output (PWM (+) or PWM absolute value) |
| 95 | FGIN | I | Spindle CAV servo FG input |
| 96 | TEST1 | I | Test pin. Connect to GND. |
| 97 | TEST2 | I | Test pin. Connect to GND. |
| 98 | TEST3 | I | Test pin. Connect to GND. |
| 99 | DVss | - | Digital ground |
| 100 | EFMO | O | Low when playback, EFM (Encoded data) output when recording |

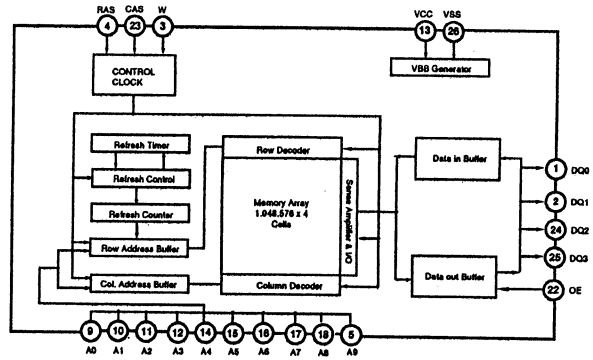


## IC BLOCK DIAGRAM

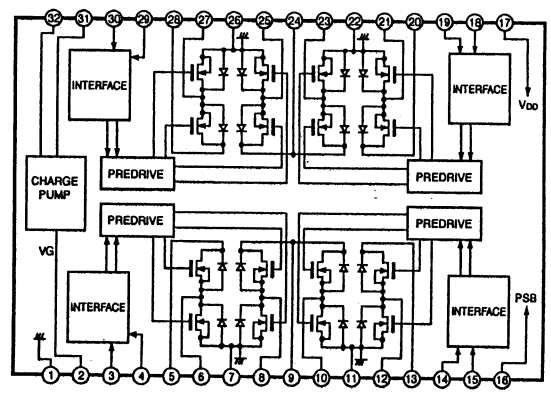
### IC522 TC7S08FU (APCREF LPF)




### IC523 KM44V1000DT-L6 (4M DRAM)




### IC531 BH6511FS (Power Driver)




| NO. | NAME | DESCRIPTION | NO. | NAME | DESCRIPTION |
|---|---|---|---|---|---|
| 1 | GND | Pre section ground terminal | 17 | VDD | Pre section power source terminal |
| 2 | VG | Gate voltage supplier terminal | 18 | IN1R | CH1 reverse input |
| 3 | IN4R | CH4 reverse input | 19 | IN1F | CH1 forward input |
| 4 | IN4F | CH4 forward input | 20 | VM1 | Power section ground terminal |
| 5 | VM4 | Power section power source terminal | 21 | OUT1F | CH1 forward output |
| 6 | OUT4F | CH4 forward output | 22 | PGND1 | Power section ground terminal |
| 7 | PGND4 | Power section ground terminal | 23 | OUT1R | CH1 reverse output |
| 8 | OUT4R | CH4 reverse output | 24 | VM12 | Power section ground terminal |
| 9 | VM34 | Power section power source terminal | 25 | OUT2R | CH2 reverse output |
| 10 | OUT3R | CH3 reverse output | 26 | PGND2 | Power section ground terminal |
| 11 | PGND3 | Power section ground terminal | 27 | OUT2F | CH2 forward output |
| 12 | OUT3F | CH3 forward input | 28 | VM2 | Power section power source terminal |
| 13 | VM3 | Power section power source terminal | 29 | IN2F | CH2 forward input |
| 14 | IN3F | CH3 forward input | 30 | IN2R | CH2 reverse input |
| 15 | IN3R | CH3 reverse input | 31 | CAPA+ | Charge pump condenser connect terminal + |
| 16 | PSB | Power cut terminal | 32 | CAPA- | Charge pump condenser connect terminal - |

## IC BLOCK DIAGRAM

### IC551 M30600M8-112FP (Micro Processor)

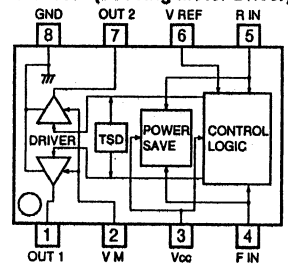
| No. | Name | I/O | Description |
|---|---|---|---|
| 1 | ANEX1 | O | NC |
| 2 | HI-DUB | O | NC |
| 3 | POWER | O | Power ON=H, Stand by=L |
| 4 | DRVSAVE | O | |
| 5 | A-MUTE | O | Audio mute=LOW |
| 6 | DA-RST | O | AD/DA IC reset |
| 7 | LD-ON | O | Laser ON=H |
| 8 | BYTE | I | Outside data bass width set up |
| 9 | CNVss | I | Outside ROM=H, Inside ROM=L |
| 10 | MODON | O | High frequency fold ON/OFF ON=H |
| 11 | WR-PWR | O | Laser power change REC=H |
| 12 | RESET | I | Hard ware reset |
| 13 | XOUT | O | 6MHz Ceramic lock |
| 14 | GND | | GND. |
| 15 | XIN | I | 6MHz Ceramic lock |
| 16 | Vcc | | 3.3V |
| 17 | NM1 | I | 3.3V |
| 18 | XINT | INT | Interrupt from CDX2652AR |
| 19 | DQSY | INT | UBITCD or MD SUB Q sink interrupt |
| 20 | SQSY | INT | ADIP, SUB Q sink interrupt |
| 21 | SCTX | O | CXD2625AR data write, magnet head ON/OFF |
| 22 | DIG-RES | O | XRST signal |
| 23 | SENS | I | SENS input |
| 24 | XLATCH | O | XLAT data latch |
| 25 | MNT3 | I | CXD2652AR monitor signal |
| 26 | MNT2 | I | CXD2652AR monitor signal |
| 27 | MNT1 | I | CXD2652AR monitor signal |
| 28 | MNT0 | I | CXD2652AR monitor signal |
| 29 | E2P-SDA | I/O | SDA EEPROM data |
| 30 | EP2-SCL | O | SCL EEPROM Clock |
| 31 | SWDT | O | CXD2652AR serial data output |
| 32 | SRDR | I | CXD2652AR serial data input |
| 33 | SCLK | O | CXD2652AR serial clock |
| 34 | SYS-ACK | O | Syscon serial acknowledge |
| 35 | SYS-DTO | O | Syscon serial data output |
| 36 | SYS-DTI | I | Syscon serial data input |
| 37 | SYS-CLK | I | Syscon serial clock input |
| 38 | SYS-STB | I | Syscon serial strobe input |
| 39 | RDY | I | R throw VDD connect |
| 40 | ALE | O | NC |
| 41 | HOLD | O | R throw VDD connect |
| 42 | HLDA | O | NC |
| 43 | BCLK | O | NC |
| 44 | EXROM-RD | O | RD for external ROM |
| 45 | BHE | O | NC |
| 46 | EXROM-WR | O | WR for external ROM |
| 47 | CS3 | O | NC |
| 48 | CS2 | O | NC |
| 49 | PWB-CHK | I | PWB test mode detector(L) |
| 50 | EXROM | O | Outside ROM chip select |

| No. | Name | I/O | Description |
|---|---|---|---|
| 51 | P43/A19 | O | NC |
| 52 | P42/A18 | O | NC |
| 53 | P41/A17 | O | NC |
| 54 | MONO-CONT | O | Monaural double speed playback control |
| 55 | EXROM-A15 | O | Outside ROM address bath |
| 56 | EXROM-A14 | O | Outside ROM address bath |
| 57 | EXROM-A13 | O | Outside ROM address bath |
| 58 | EXROM-A12 | O | Outside ROM address bath |
| 59 | EXROM-A11 | O | Outside ROM address bath |
| 60 | EXROM-A10 | O | Outside ROM address bath |
| 61 | EXROM-A09 | O | Outside ROM address bath |
| 62 | Vcc | | 3.3V |
| 63 | EXROM-A08 | O | Outside ROM address bath |
| 64 | GND | | GND |
| 65 | EXROM-A07 | O | Outside ROM address bath |
| 66 | EXROM-A06 | O | Outside ROM address bath |
| 67 | EXROM-A05 | O | Outside ROM address bath |
| 68 | EXROM-A04 | O | Outside ROM address bath |
| 69 | EXROM-A03 | O | Outside ROM address bath |
| 70 | EXROM-A02 | O | Outside ROM address bath |
| 71 | EXROM-A01 | O | Outside ROM address bath |
| 72 | EXROM-A00 | O | Outside ROM address bath |
| 73 | P17/D15 | O | NC |
| 74 | P16/D14 | O | NC |
| 75 | P15/D13 | O | NC |
| 76 | P14/D12 | O | NC |
| 77 | P13/D11 | O | NC |
| 78 | P12/D10 | O | NC |
| 79 | P11/D9 | O | NC |
| 80 | P10/D8 | O | NC |
| 81 | EXROM-D07 | I | Outside ROM data bath |
| 82 | EXROM-D06 | I | Outside ROM data bath |
| 83 | EXROM-D05 | I | Outside ROM data bath |
| 84 | EXROM-D04 | I | Outside ROM data bath |
| 85 | EXROM-D03 | I | Outside ROM data bath |
| 86 | EXROM-D02 | I | Outside ROM data bath |
| 87 | EXROM-D01 | I | Outside ROM data bath |
| 88 | EXROM-D00 | I | Outside ROM data bath |
| 89 | REFLECT | I | Reflection factor Hi:Low, Lo:High |
| 90 | PROTECT | I | Miss recording Hi:Recording prihibit |
| 91 | LIMTIN | I | Limit switch Lo:on, Hi:off |
| 92 | EJECT | I | Eject switch Lo:eject finish |
| 93 | LOADING | I | Loading switch Lo:loading finish |
| 94 | HDCADY/PA | I | Head down detect/Disk IN detect Lo:detect |
| 95 | KIN | 3ST | Loading control out=h, in=1, brake=h |
| 96 | GND | | GND |
| 97 | LOAD | 3ST | Loading control out=1, in=h, brake=h |
| 98 | VREF | | 3.3V, Vcc connect |
| 99 | AVCC | | 3.3V, Vcc connect |
| 100 | EMP | O | emphasis control Hi:off, Lo:on |

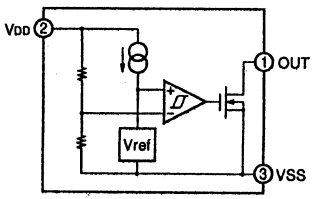


## IC BLOCK DIAGRAM

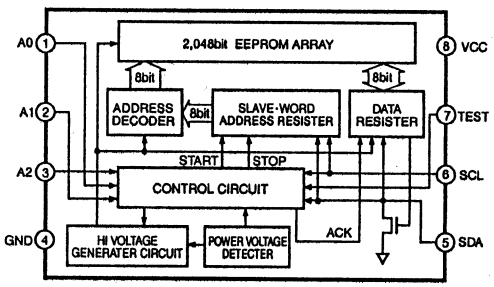
### IC533 BA6289F (Loading Motor Driver)



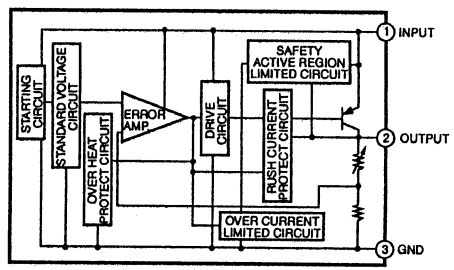

### IC552 RN5VL27AA (3-Terminal Power Regulator)



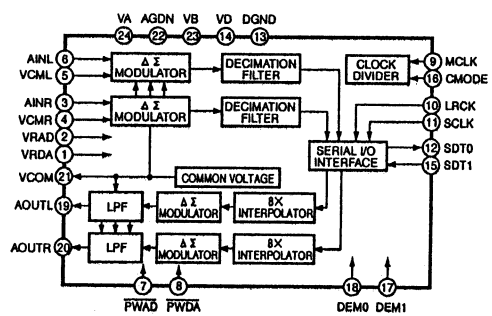

### IC553 BR24C02F (EEPROM)




### IC561 UPC2933T (Regulator)



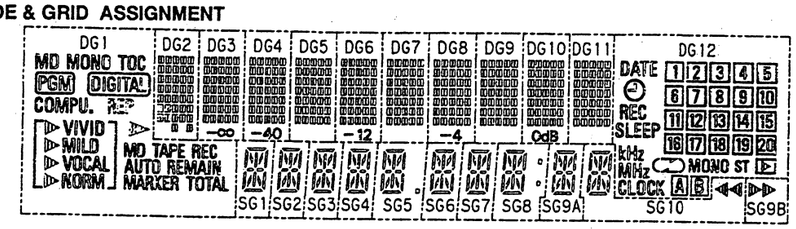

### IC591 AK4512-VF (AD/DA Converter)

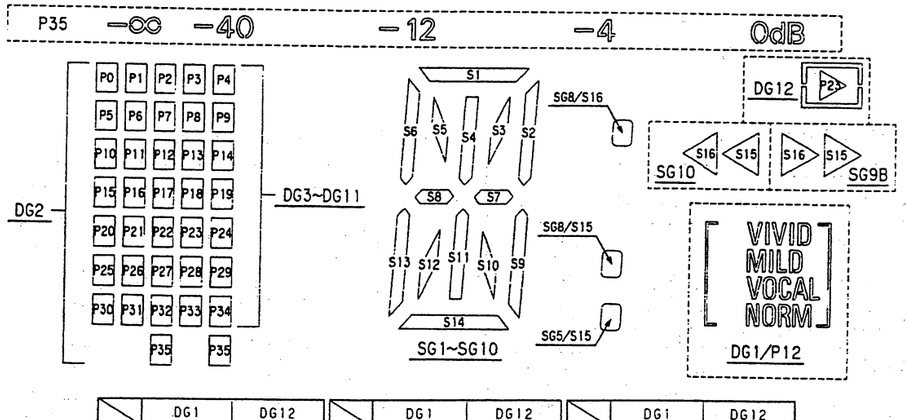



| No. | Name | I/O | Description |
|---|---|---|---|
| 1 | VRDA | I | Voltage reference input pin for DAC, VA |
| 2 | VRAD | I | Voltage reference input pin for ADC, VA |
| 3 | AINR | I | R-ch analog input pin |
| 4 | VCMR | O | R-ch common voltage output pin, VA/2<br>Connect a electrical capacitor 4.7uF and Ceramic capacitor 0.1uF between AGND. |
| 5 | VCML | O | L-ch common voltage output pin, VA/2<br>Connect a electrical capacitor 4.7uF and Ceramic capacitor 0.1uF between AGND. |
| 6 | AINL | I | L-ch analog input pin |
| 7 | PWAD | I | ADC power down mode pin "L":Power down |
| 8 | PWDA | I | DAC power down mode pin "L":Power down |
| 9 | MCLK | I | MASTER CLOCK INPUT PIN |
| 10 | LRCK | I | Input/output channel clock pin |
| 11 | SCLK | I | Audio serial data clock pin |
| 12 | SDTO | O | Audio serial data output pin |
| 13 | DGND | - | Digital ground pin |
| 14 | VD | - | Digital power supply pin |
| 15 | SDTI | I | Audio serial data input pin |
| 16 | CMODE | I | Master clock select pin "H":384fs, "L":256fs |
| 17 | DEM1 | I | De-emphasis frequency select pin |
| 18 | DEM0 | I | De-emphasis frequency select pin |
| 19 | AOUTL | O | L-ch analog output pin |
| 20 | AOUTR | O | R-ch analog output pin |
| 21 | VCOM | O | Common voltage output pin, VA/2<br>Connect a electrical capacitor 4.7uF and Ceramic capacitor 0.1uF between AGND. |
| 22 | AGND | - | Analog ground pin |
| 23 | VB | - | Substrate pin |
| 24 | VA | - | Analog power supply pin |

## FL DISPLAY

### ANODE & GRID ASSIGNMENT




| | DG1 | DG12 |
|---|---|---|
| P0 | TOC | 1 |
| P1 | MONO | 2 |
| P2 | MD | 3 |
| P3 | PGM | 4 |
| P4 | DIGITAL | 5 |
| P5 | COMPU. | 6 |
| P6 | REP | 7 |
| P7 | | 8 |
| P8 | ▷(VIVID) | 9 |
| P9 | ▷(MILD) | 10 |
| P10 | ▷(VOCAL) | 11 |
| P11 | ▷(NORM) | 12 |
| P12 | [ ≡ | 13 |
| P13 | ▷ | 14 |
| P14 | MD | 15 |

| | DG1 | DG12 |
|---|---|---|
| P15 | MARKER | 15 |
| P16 | AUTO | 17 |
| P17 | TOTAL | 18 |
| P18 | REMAIN | 19 |
| P19 | REC | 20 |
| P20 | TAPE | DATE |
| P21 | | ◴ |
| P22 | | REC |
| P23 | | ▷ |
| P24 | | ▬ |
| P25 | | ☾ |
| P26 | | ☽ |
| P27 | | ▂ |
| P28 | | MONO |
| P29 | | ST |

| | DG1 | DG12 |
|---|---|---|
| P30 | | SLEEP |
| P31 | | kHz |
| P32 | | MHz |
| P33 | | A |
| P34 | | B |
| P35 | | CLOCK |

### PIN ASSIGNMENT

| Pin No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Assignment | F1 | F1 | F1 | NP | IC | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | S13 | S14 | S15 | S16 |

| Pin No. | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Assignment | H | SG1 | SG2 | SG3 | SG4 | SG5 | SG6 | SG7 | SG8 | SG9A | SG10 | NL | NL | NL | NL | NL | NL | NL | NL | NL | NL |

| Pin No. | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Assignment | NL | NL | NL | NL | NL | NL | NL | NL | NL | NL | NL | NL | NL | SG9B | D | NP | F2 | F2 | F2 |

| Pin No. | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Assignment | F2 | F2 | F2 | NP | P35 | P34 | P33 | P32 | P31 | P30 | P29 | P28 | P27 | P26 | P25 | P24 | P23 | P22 | P21 | P20 | P19 |

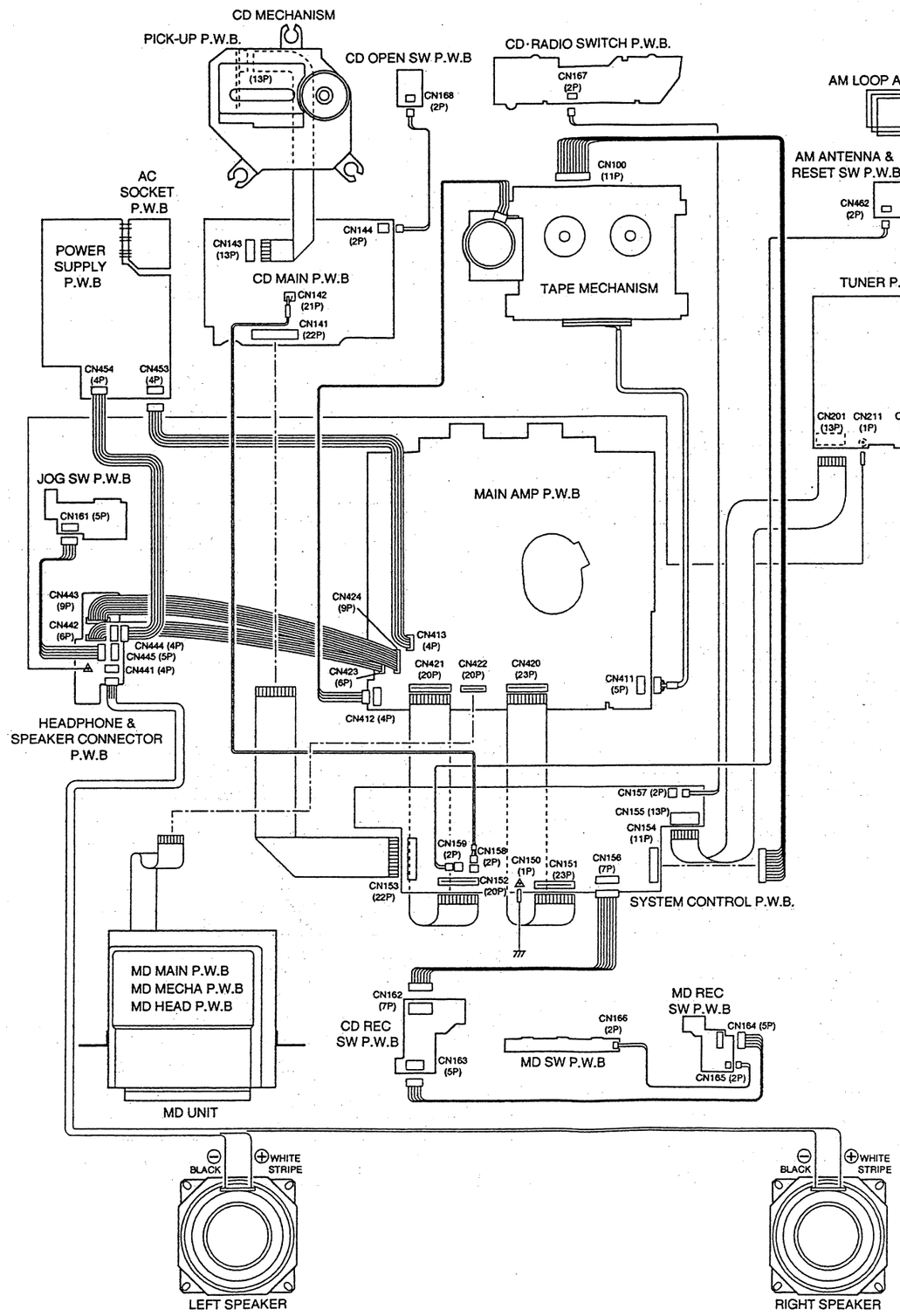
| Pin No. | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Assignment | P18 | P17 | P16 | P15 | P14 | P13 | P12 | P11 | P10 | P9 | P8 | P7 | P6 | P5 | P4 | P3 | P2 | P1 | P0 | NP | NP |

| Pin No. | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Assignment | DG12 | DG11 | DG10 | DG9 | DG8 | DG7 | DG6 | NP | NP | DG5 | DG4 | DG3 | DG2 | DG1 | IC | NP | F1 | F1 | F1 |

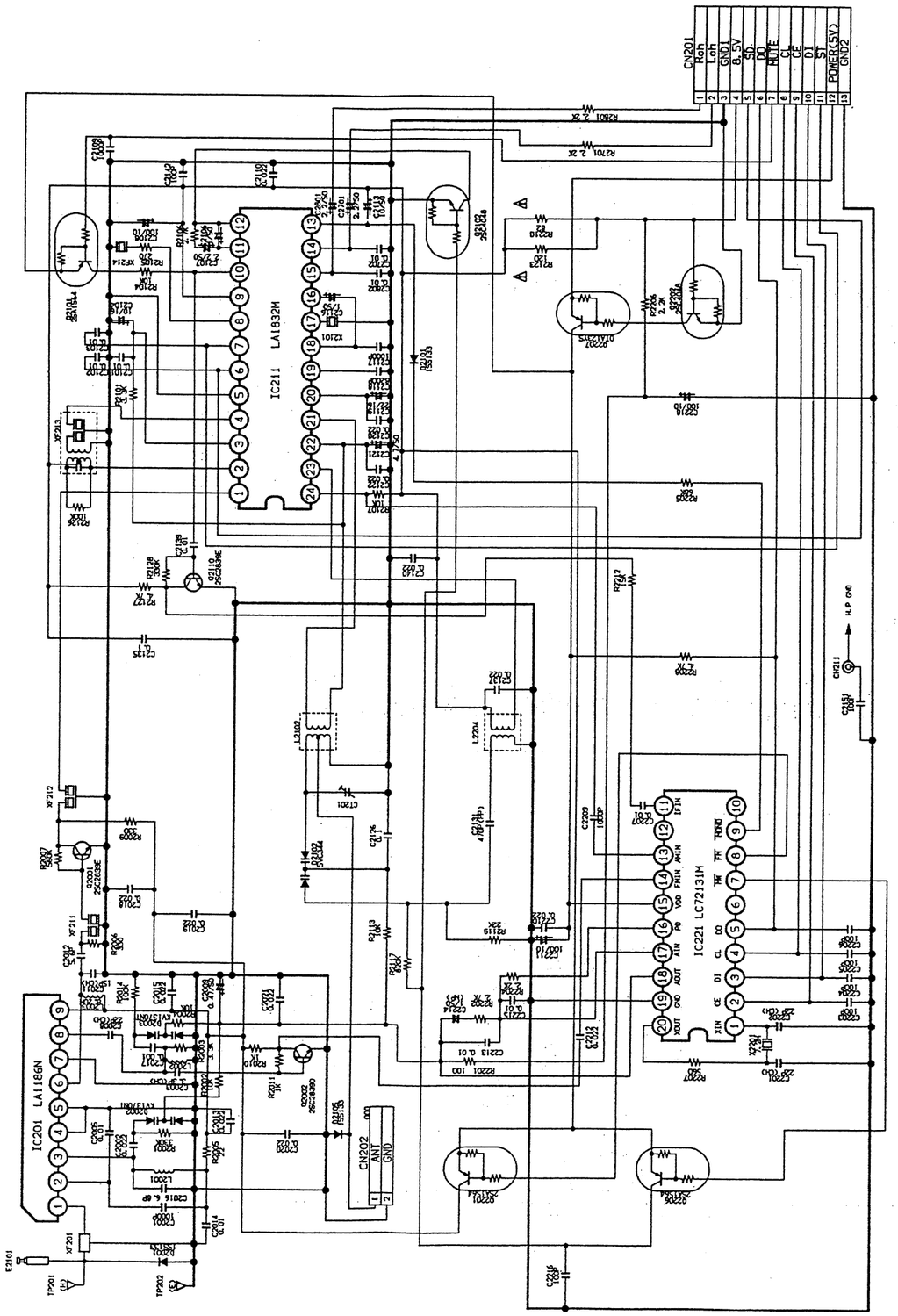
F1,F2:Filament DG1~DG12,SG1~SG10:Grid S1~S16,P0~P35:Anode NP:No Pin NL:No Lead



## WIRING CONNECTION



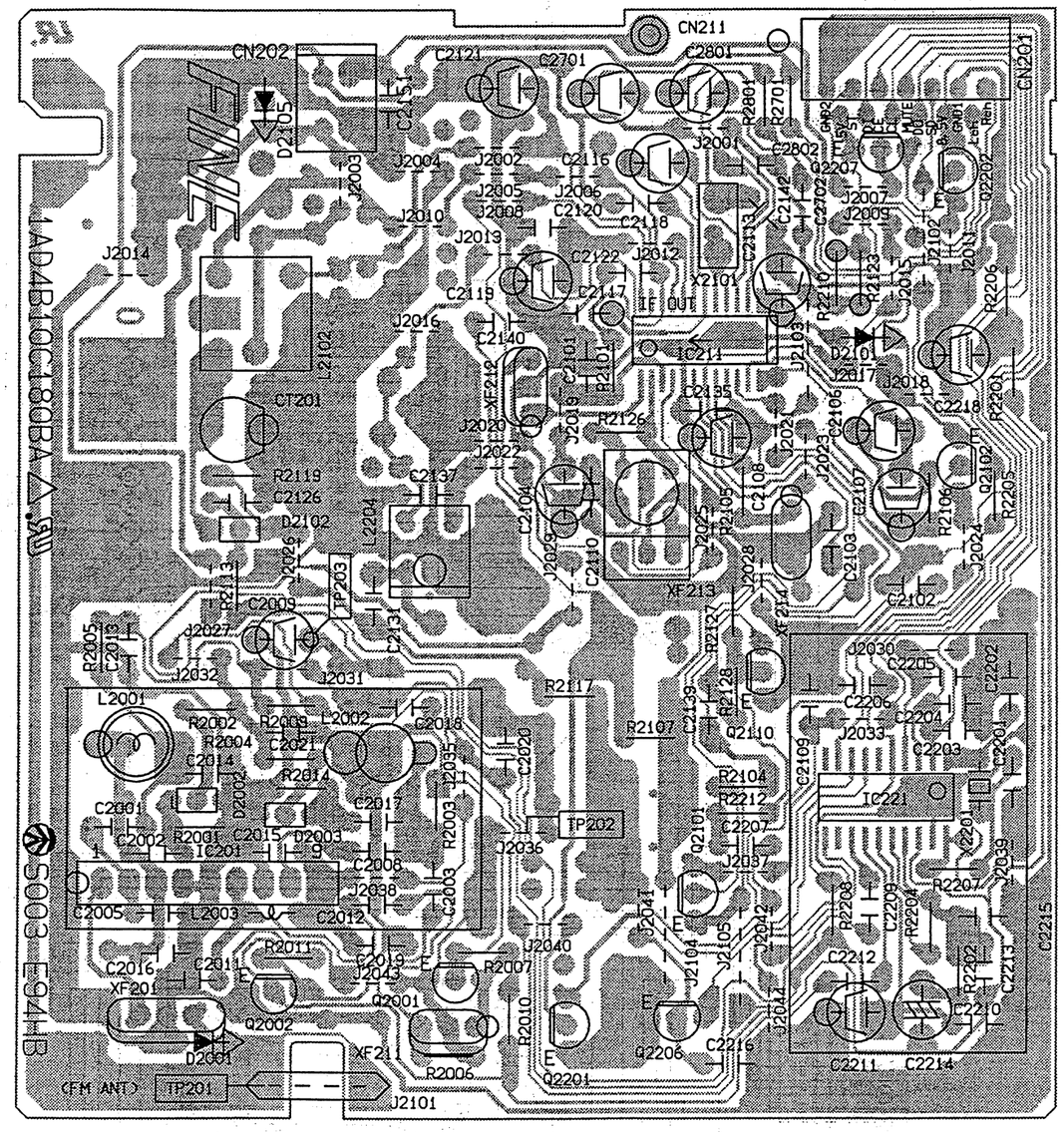
## SCHEMATIC DIAGRAM (TUNER)




This is a basic schematic diagram.

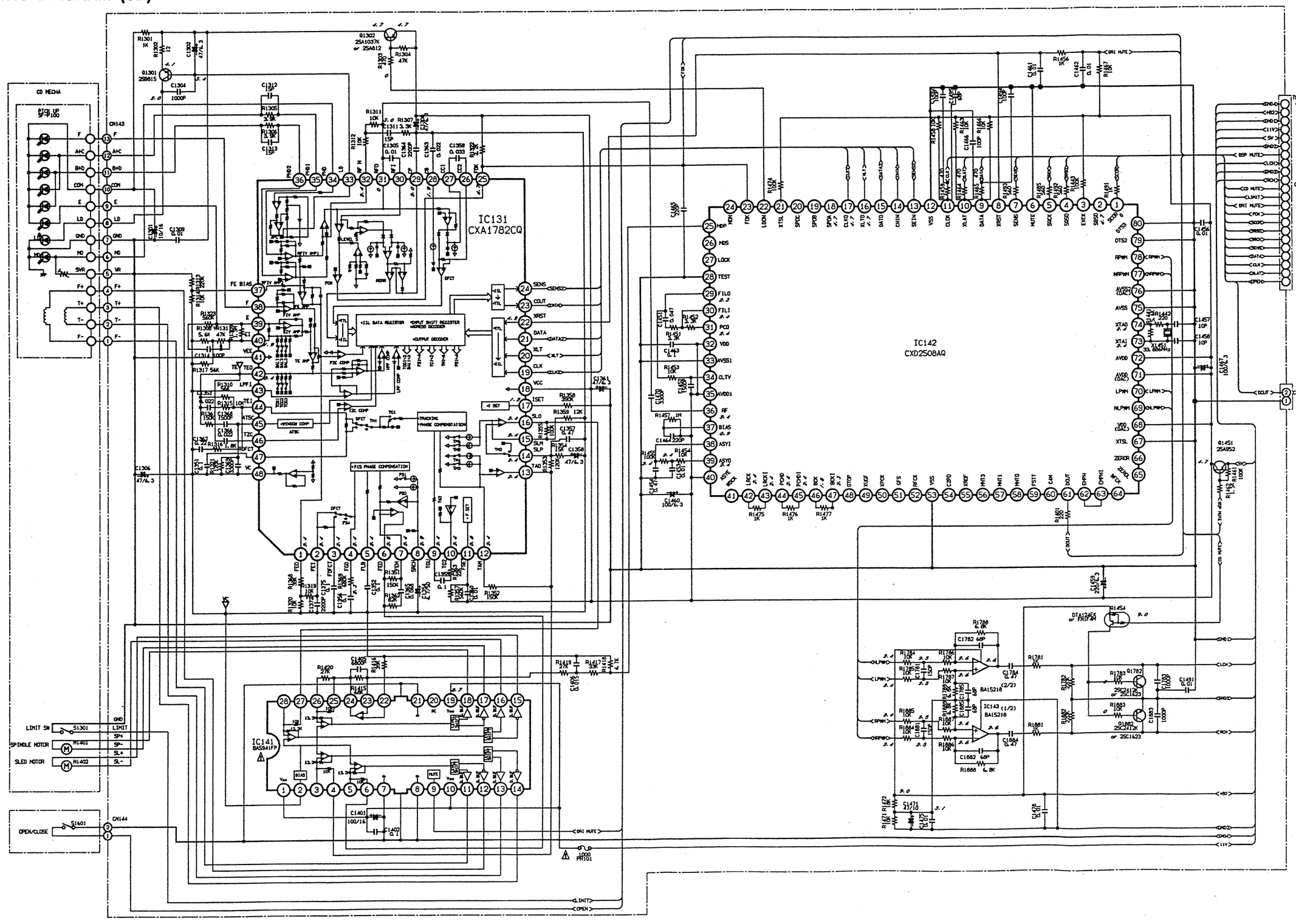


## WIRING DIAGRAM (TUNER)



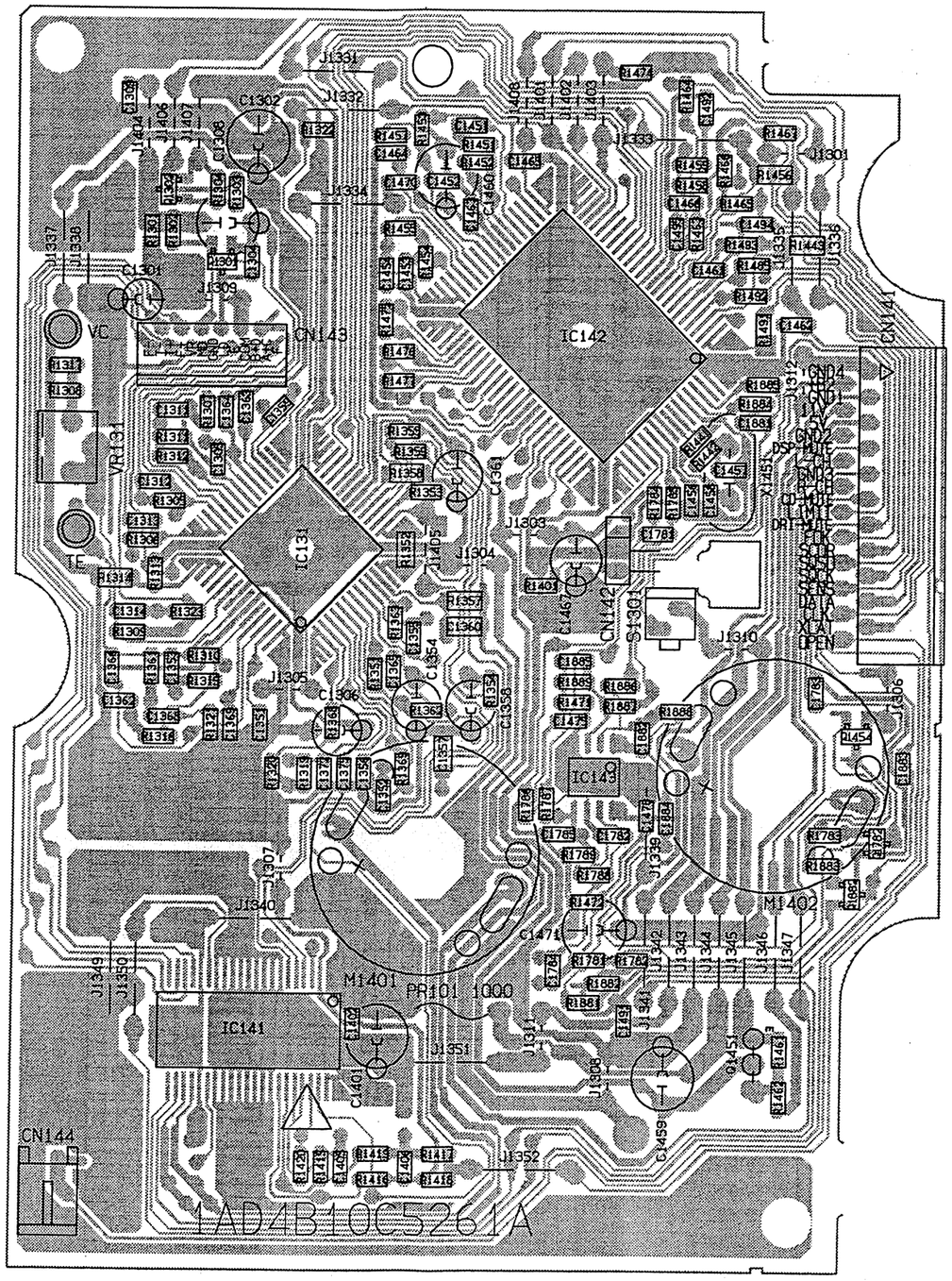

TUNER P.W.B

## SCHEMATIC DIAGRAM (CD)



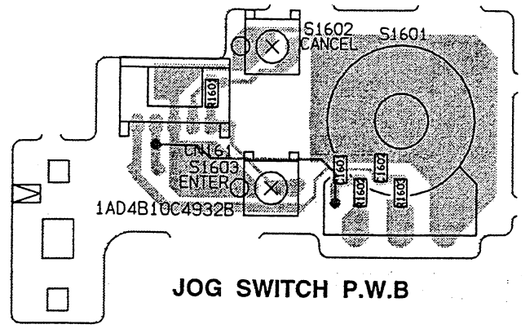

This is a basic schematic diagram.

## WIRING DIAGRAM (CD)

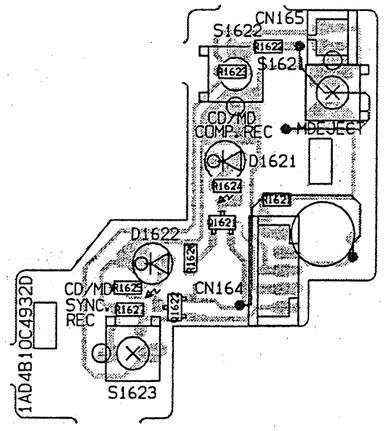



CD P.W.B

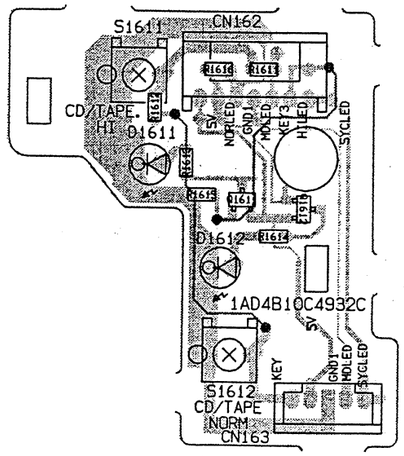
## WIRING DIAGRAM (SWITCH)



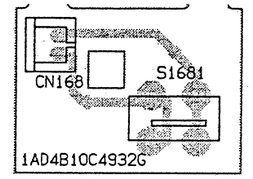

JOG SWITCH P.W.B



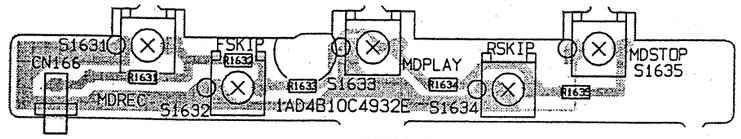

CD-MD DIGITAL REC SWITCH P.W.B



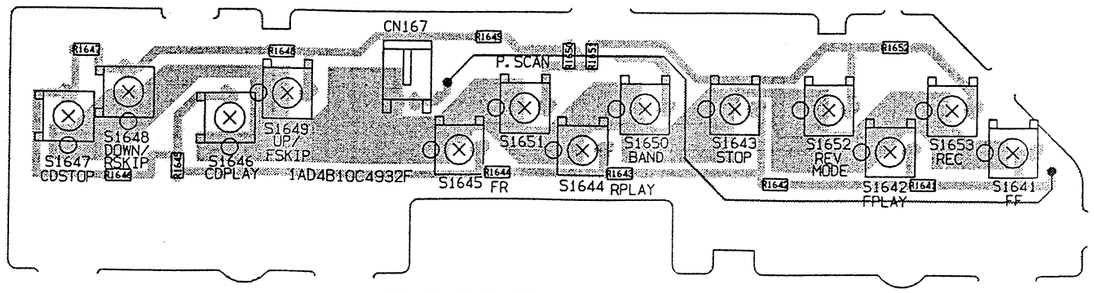

CD-TAPE ONE TOUCH REC SWITCH P.W.B




CD OPEN SWITCH P.W.B

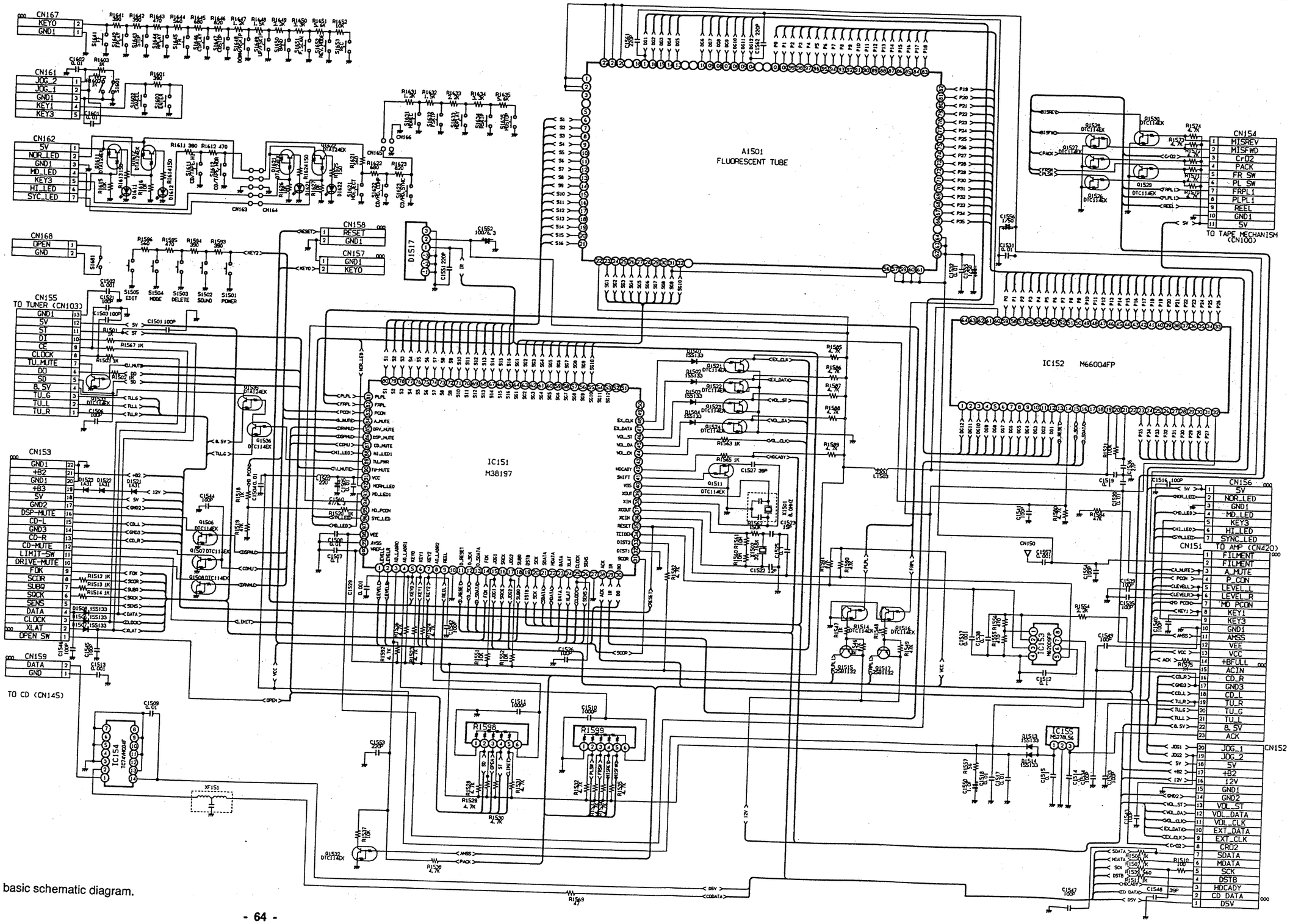



MD SWITCH P.W.B



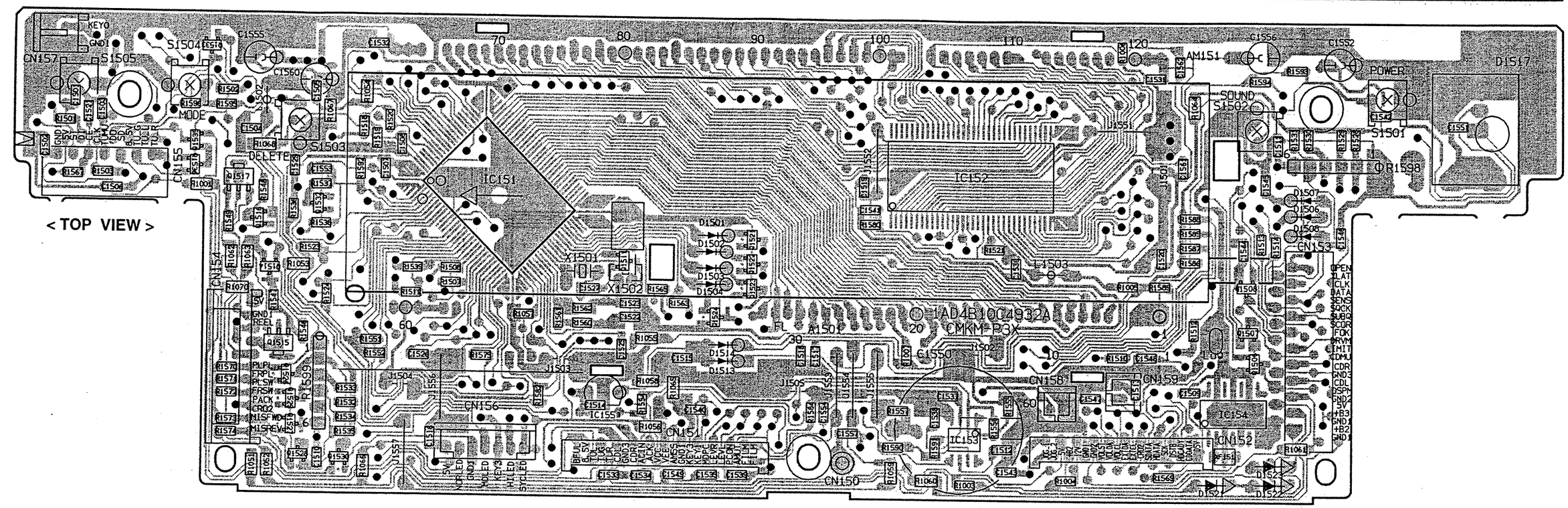

CD-RADIO SWITCH P.W.B

## SCHEMATIC DIAGRAM (SYSCON)

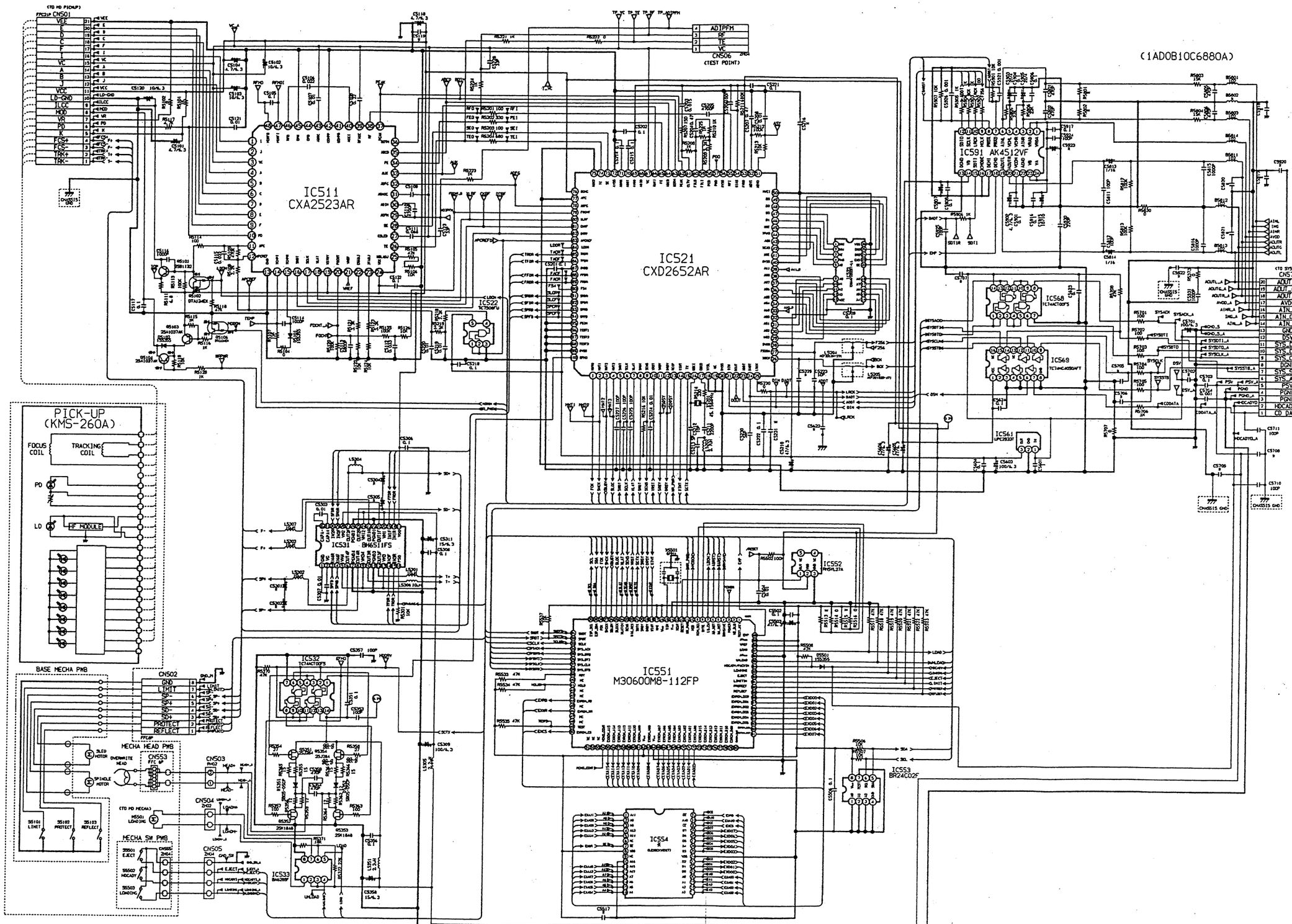



This is a basic schematic diagram.

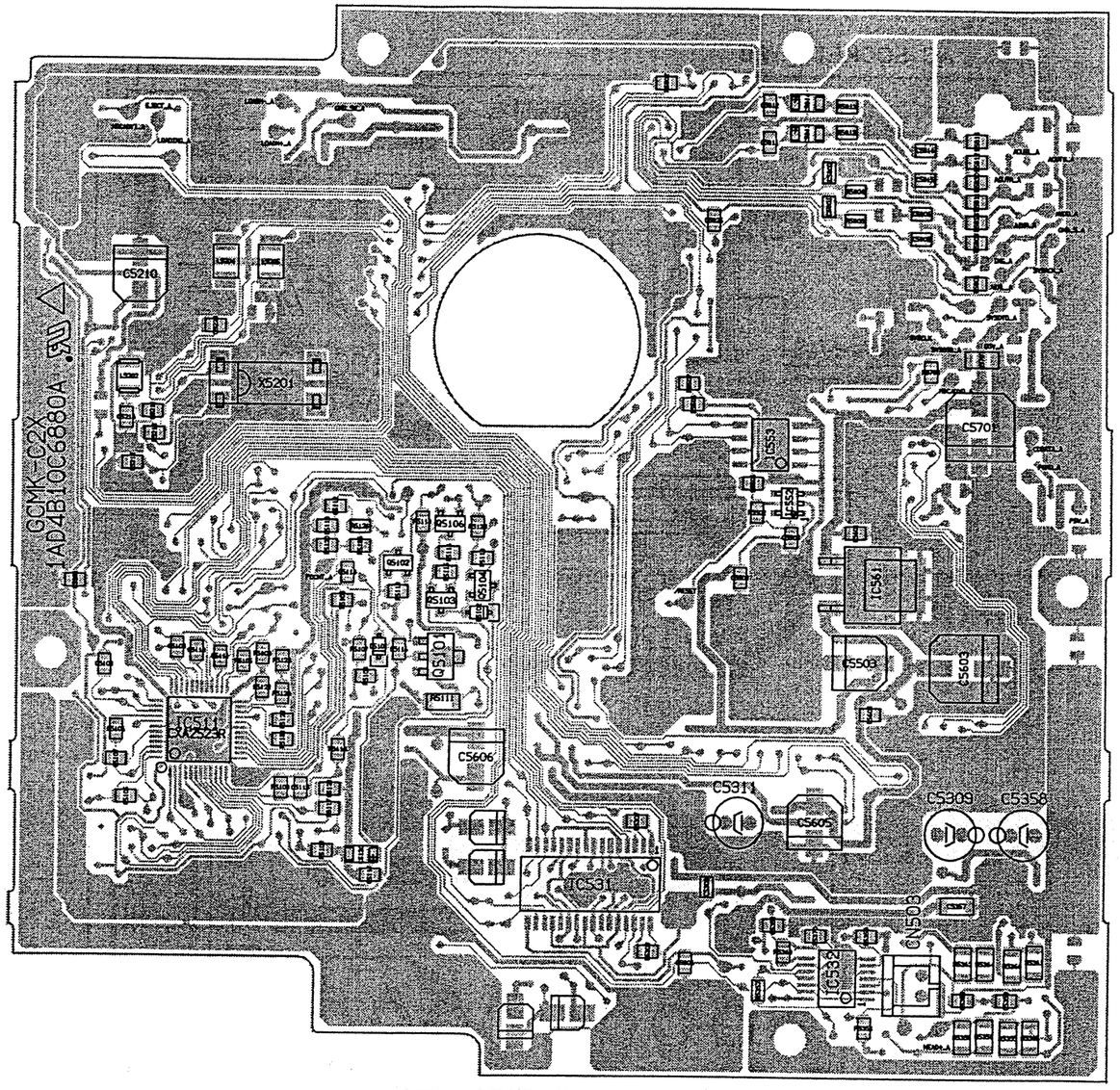
## WIRING DIAGRAM (SYSCON)



## SCHEMATIC DIAGRAM (MD)



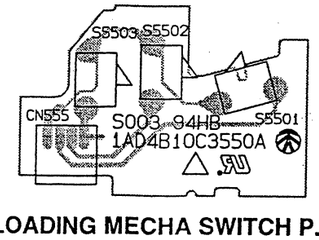

This is a basic schematic diagram.



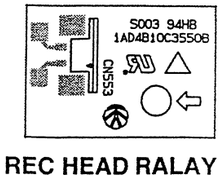

**MD MAIN P.W.B**

This PWB consists of 4 layers. (Omit 2 layers of the inside.)

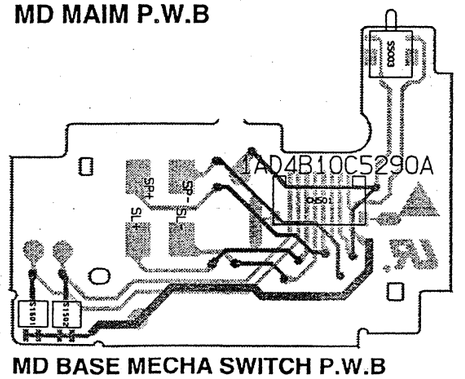
**MD MAIM P.W.B**




**MD LOADING MECHA SWITCH P.W.B**

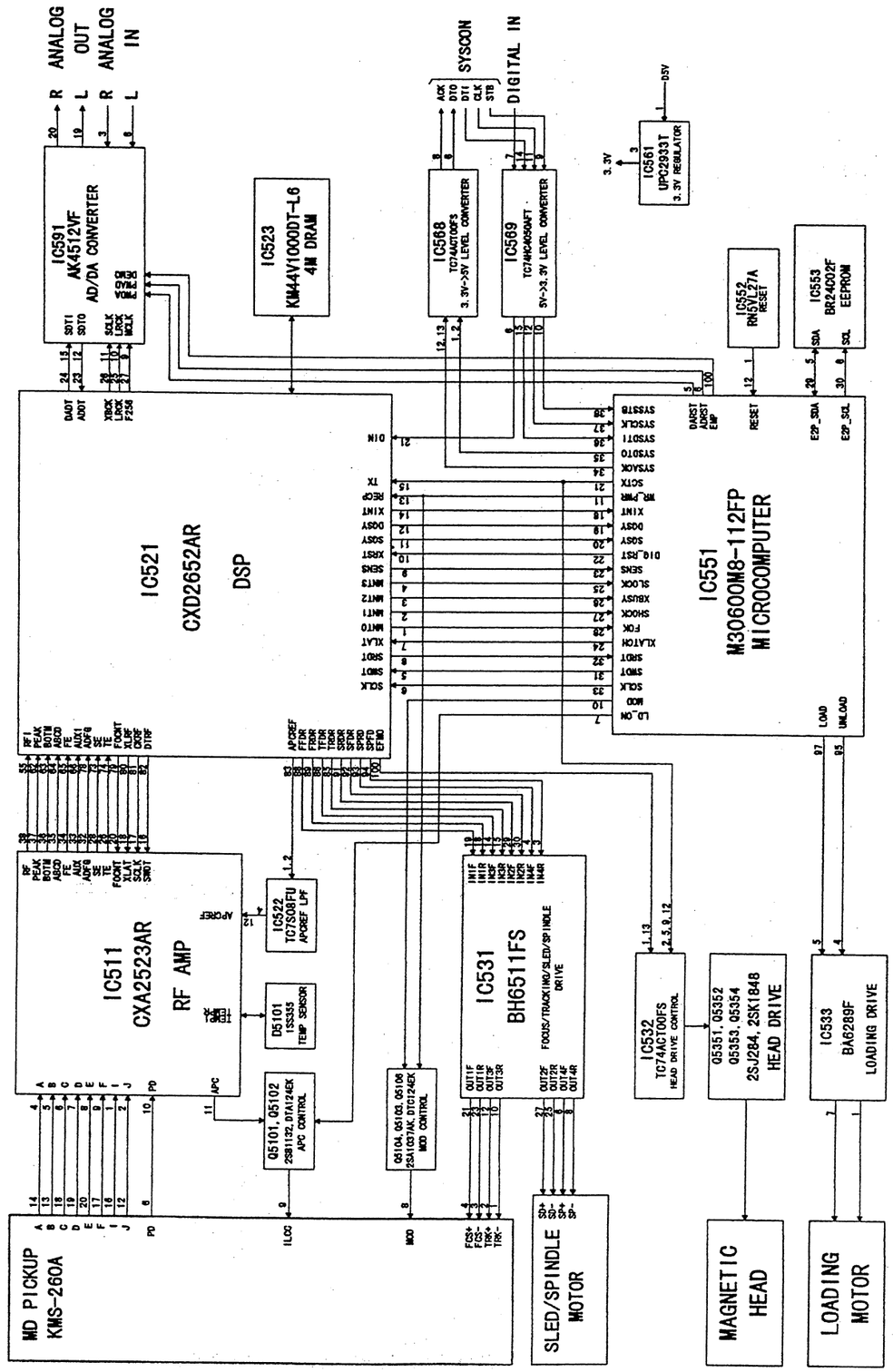



**MD REC HEAD RALAY P.W.B**



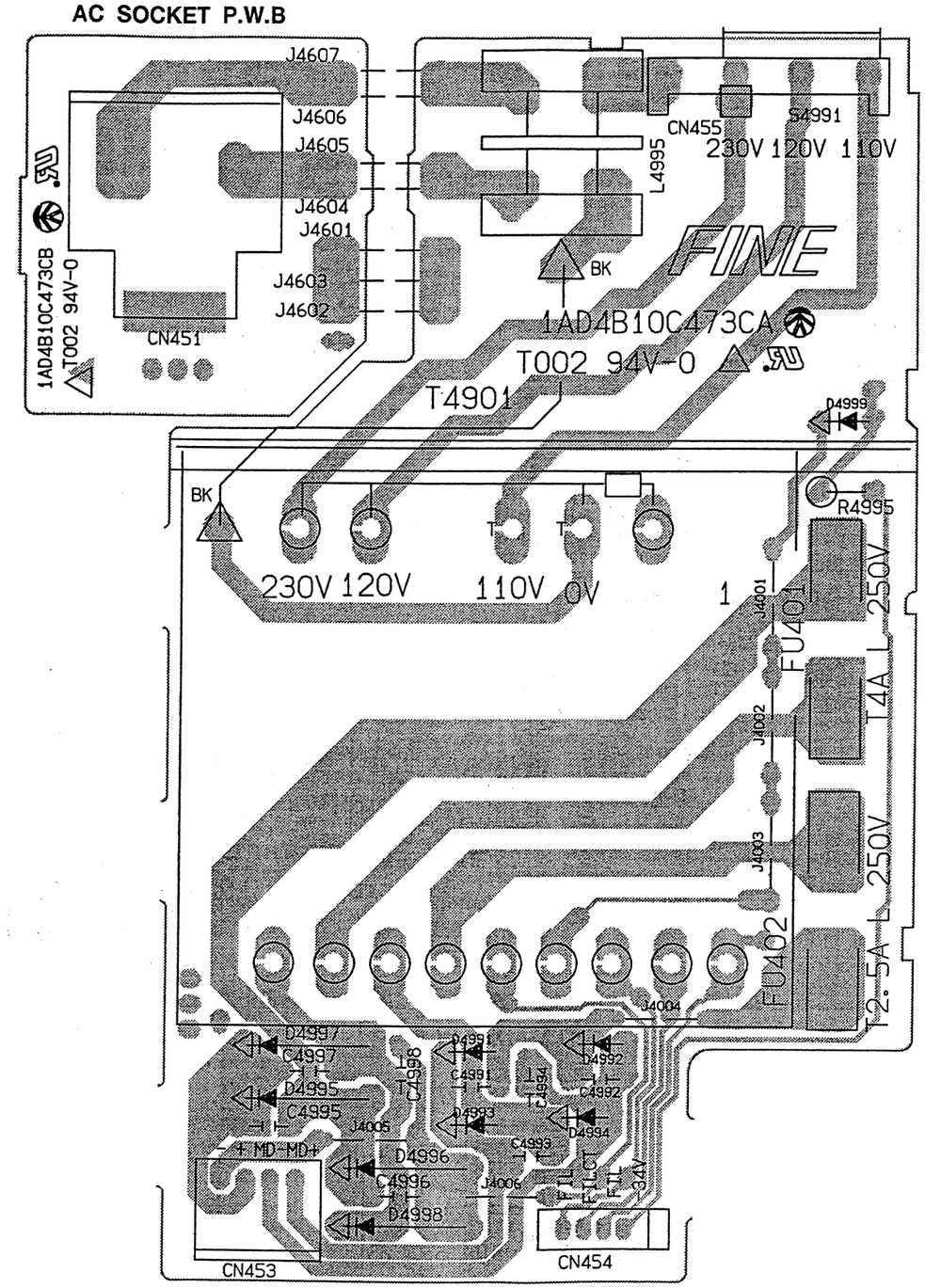

**MD BASE MECHA SWITCH P.W.B**

## BLOCK DIAGRAM (MD)



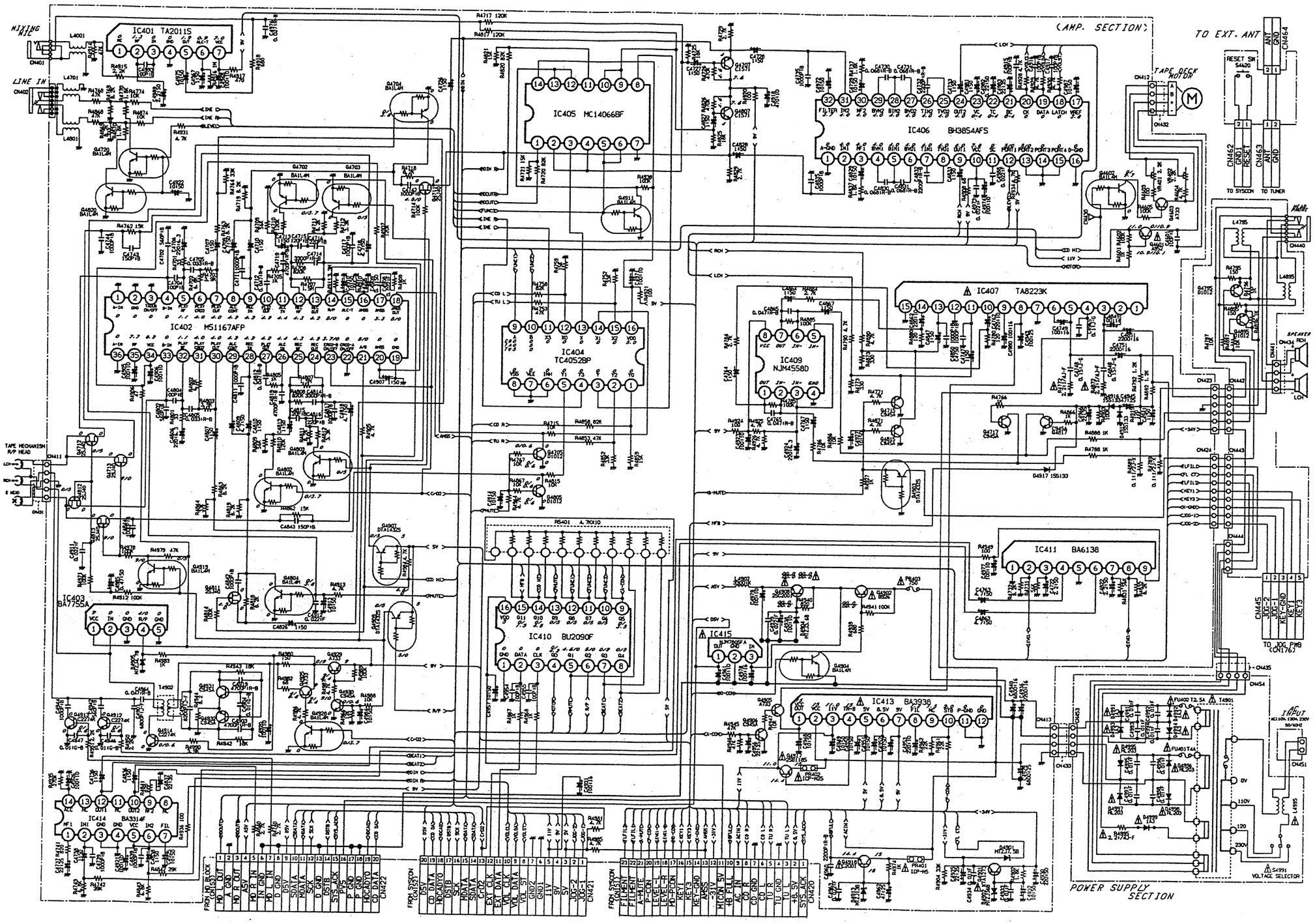



## WIRING DIAGRAM (POWER)




POWER SUPPLY P.W.B

## SCHEMATIC DIAGRAM (AMPLIFIER)




This is a basic schematic diagram.

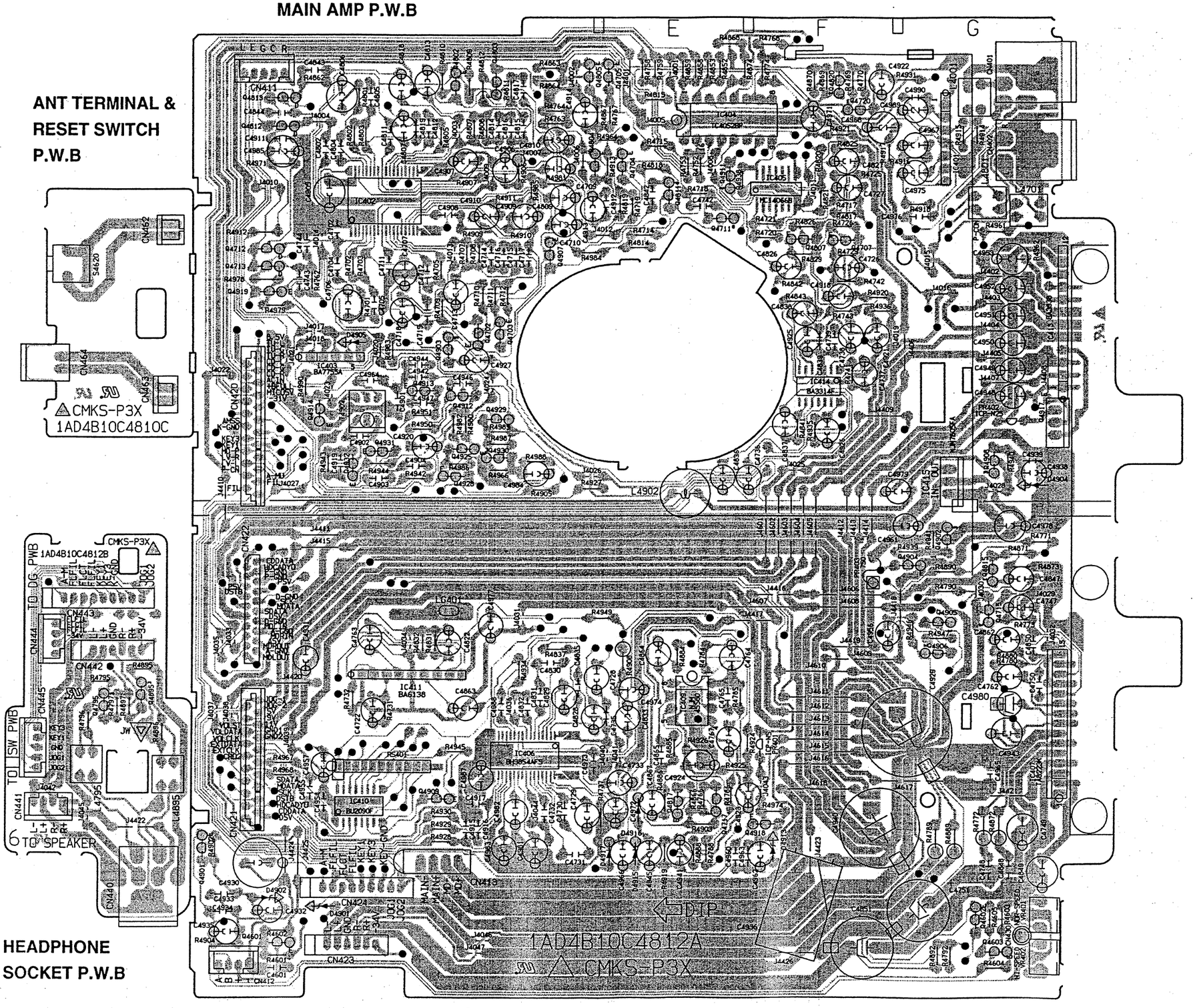


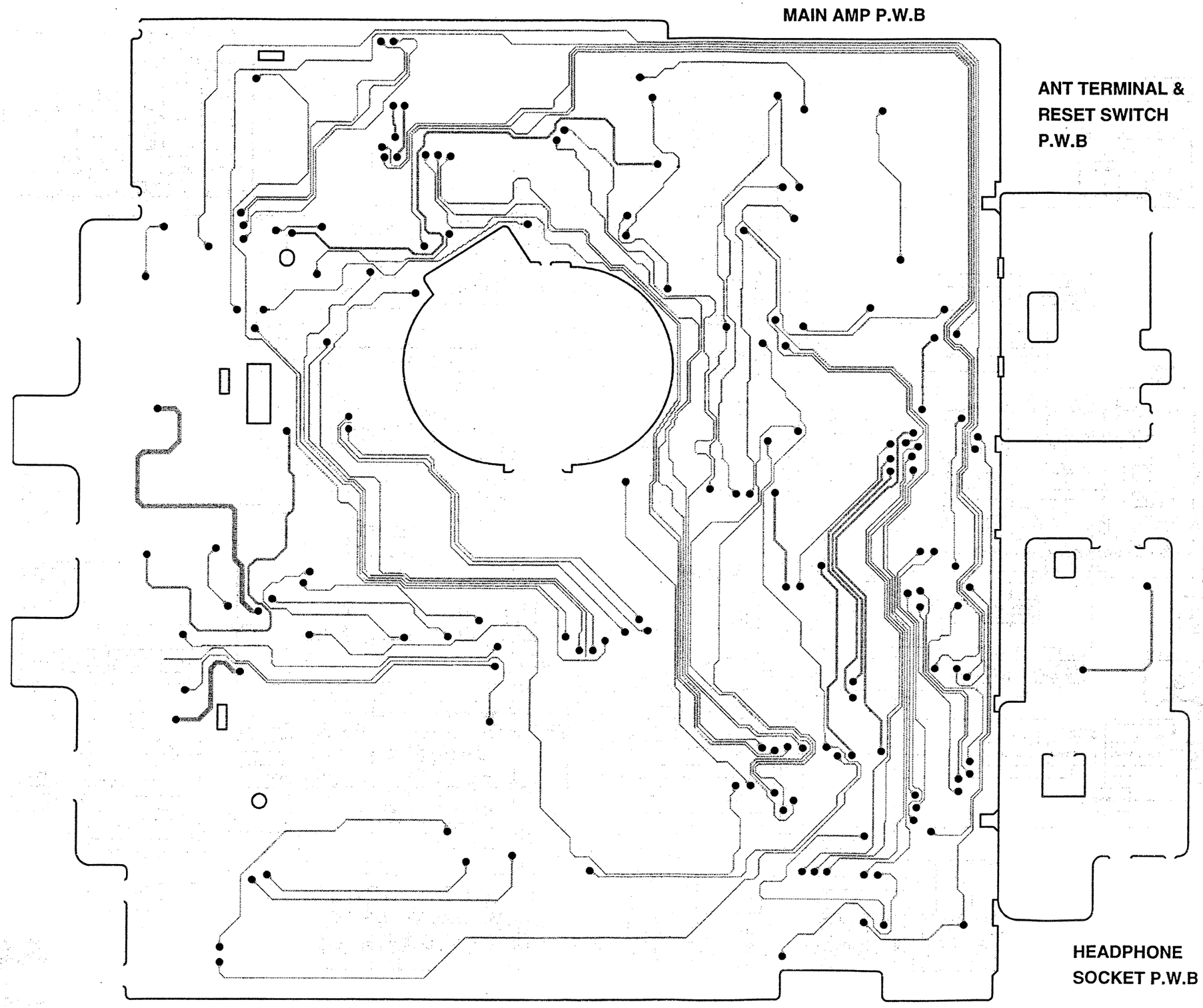
### PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designated components in which safety can be of special significance. When replacing a component identified by ⚠ , use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

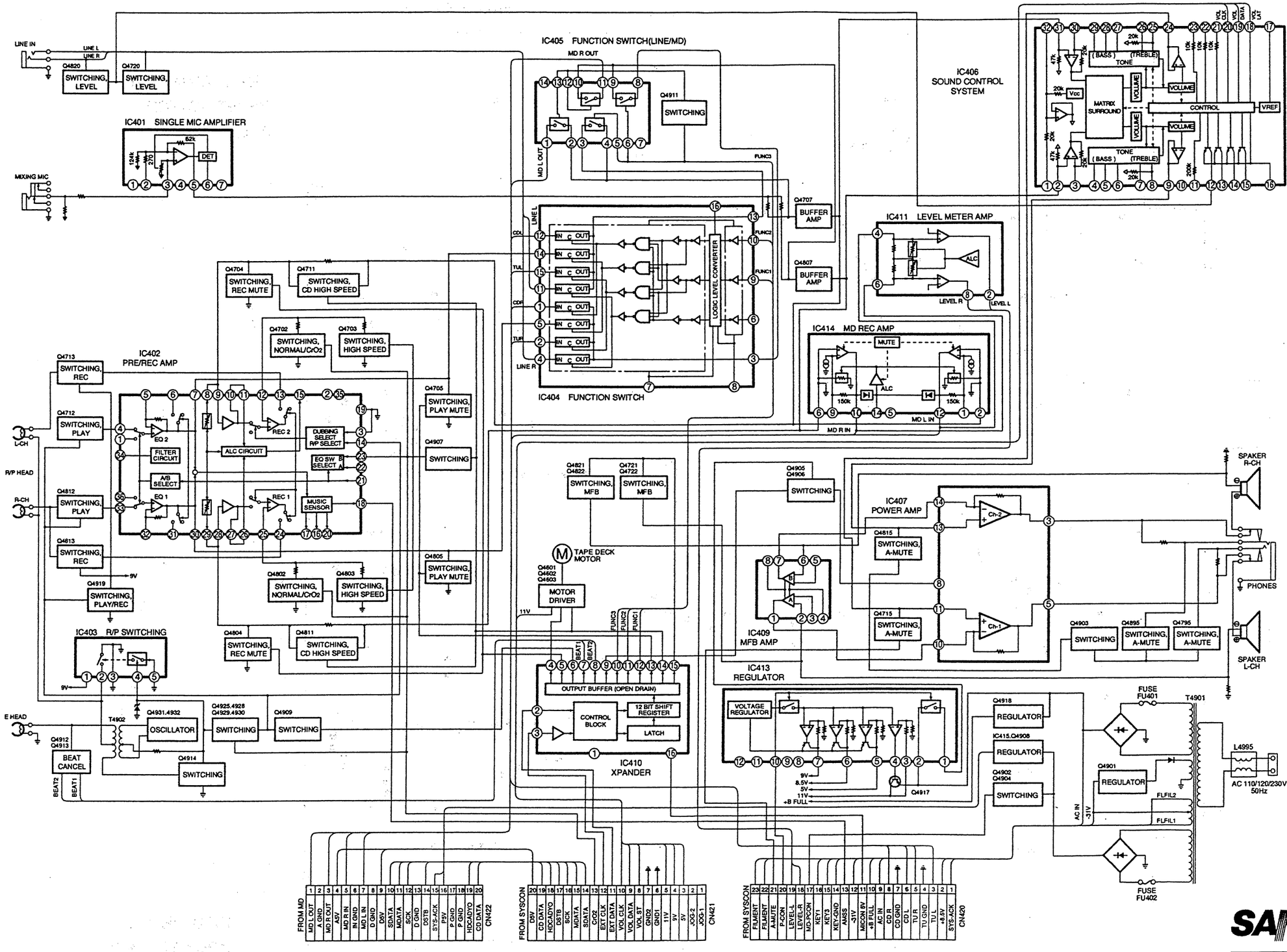
MAIN AMP P.W.B

ANT TERMINAL &
RESET SWITCH
P.W.B




MAIN AMP P.W.B
ANT TERMINAL &
RESET SWITCH
P.W.B
HEADPHONE
SOCKET P.W.B

## BLOCK DIAGRAM (AMPLIFIER)






Apr. / '98 / 2400 NS Printed in Japan

SANYO

SANYO Technosound Co., Ltd.
Osaka, Japan